

The Metal Worker.

A WEEKLY JOURNAL OF THE
TIN, PLUMBING AND HOUSE FURNISHING TRADES.

Published every Saturday Morning, by DAVID WILLIAMS No. 83 Reade Street, New York. Entered at the Post Office, New York, as second-class matter.

The Metal Worker—Vol. XIII, No. 7.
Stove and Tin Trade Journal—Vol. XIV, No. 17.

\$1.20 a year.
Including Postage

NEW YORK, SATURDAY, FEBRUARY 14, 1880.

Cornice Making.

IX.

In our description of cutting the small pieces required in the construction of a cornice by hand, we mentioned that the snips turned a burr-edge upon the iron, which required to be removed by malleting before the iron is fit for use. Particularly is this true of curved or irregular edges. The burr-edge thus turned in the process of cutting is somewhat peculiar in its nature. It cannot be removed by the piece being rolled in ordinary rolls, and, unless some dexterity is displayed in the use of the mallet, the edge will not be entirely smoothed or else the surface of the metal will be stretched. It requires a considerable degree of skill to mallet out small work satisfactorily, avoiding both of the difficulties above mentioned.

The engraving accompanying this article represents a device in somewhat general use for performing this operation by power. The machine is nothing more or less than a power mallet. The belt operates a small pulley, which revolves a shaft upon which is a crank. The handle of the mallet is slotted in such a way as to be worked by this crank in the shaft. A very considerable degree of speed is maintained in the mallet, and work smoothed by it is quite satisfactory in character. The operator has nothing more to do than to pass the pieces successively under the mallet.

A mallet operated in this manner at a high rate of speed requires some peculiarities of construction in order to fit it for the work that it is to perform. A solid wooden head not only wears out very rapidly, but is apt to strike too hard a blow. In addition to a spring being arranged in the handle, the head of the mallet requires to be cushioned, either by a dead-air space or by the intervention of pieces of rubber. Besides the style of power mallet here presented, other devices for performing the same operation by power have been invented. One of these to which, perhaps, from a mechanic's standpoint, there is less objection than the one we here illustrate in the matter of wearing out, is arranged to work something like an upright engine, or, to make another comparison, something like a miniature steam hammer or drop press. The head or mallet moves in a vertical direction between guides or slides. Quite as high a rate of speed is obtained in a device of this kind as in the one here illustrated, while the wear of the parts is much less.

By means of this device for smoothing the work a boy of ten to fourteen years of age is able to finish up more pieces in number, and far better in quality, than a competent mechanic in the same time can do by means of the hand mallet. As we have remarked, above the use of the mallet for this purpose requires a considerable degree of skill. In the use of the machine, however,

from provisions made in its construction, the necessity of such skill on the part of the operator is entirely removed.

In the former article we referred to some plan or plans upon which the pattern pieces are marked, at the time of their development, by the pattern cutter, and by which they are identified in the shop in the various departments, and by which, in turn, the cutters are made to know how many copies are wanted. It may be well for us to refer to this point again and at considerable length, in order to call attention to some of the best methods which have been in-

particular job in some convenient manner, and in a way so plain that the pieces belonging to it will be instantly recognized in any part of the establishment and in whatever stage of completion they may be found. Accompanying each order are more or less drawings; these drawings, in turn, are required for use in connection with the work in the various departments of the establishment through which it passes. They are first required by the pattern cutter for the development of the patterns; next they are required by the formers as a guide in shaping their pieces; then they are required in the

fore, will be confined to the general points involved, leaving those who are particularly interested in organizing such a system to accommodate the details to the special requirements of their particular business.

Perhaps the most convenient method of designating the orders is by numbers. Supposing that a certain order is designated as No. 99, the subdivisions of that order will be known, for example, as main cornice, window caps and lintel cornice. Each of these subdivisions, in turn, is composed of various parts. The cornice resolves itself into miters, molding brackets, modillions, frieze-pieces, &c. For keeping record of these various parts a book may be employed, or, if an extreme system is desired and division of labor be carried to the utmost, slips may be employed, one being made up for each department through which the work is to pass. We will attempt to trace such an order as we have named above in its course through a shop by means of slips, as just mentioned.

When the order is first received upon the order-book it is entered in the name of the customer, with full particulars as to the address of the architect, contractor, when it is required to be put upon the building, price, terms of payment, shipping directions, &c. The drawings are all marked with the number of the order, which we have supposed to be 99, and in addition each drawing has a number of its own, commencing with the elevation as No. 1 and the plan as No. 2, then following with the details, &c. A record of these drawings is also made in connection with the entry of the order for the purpose of knowing what becomes of them, and in order to keep trace of them during the progress of the work through the establishment. Sometimes drawings are received in different installments. Then it is desirable to keep a record of the dates at which they were received in connection with them. Sometimes a part of the drawings are returned before the work is finished. In such cases it is desirable to keep a memorandum opposite the drawings of when they were sent back. By this means a glance at the order-book at any time will determine just what drawings are on hand, just what have been sent back, and just what are lacking because they have never been received. Such a sys-

tem prevents all possibility of mistakes, confusion and dispute with reference to drawings.

When the drawing of any part of the work reaches the pattern cutter in its progress through the establishment, he numbers the parts of which he cuts the patterns in order to give them an identifying mark. For example, a bracket in the cornice is composed, we will imagine, of 20 pieces. As he cuts out the patterns for these several pieces he numbers them consecutively, commencing with 1, putting this number, in connection with the number of the order, on the piece. He also designates to what part of the cornice it belongs—for example, the main cornice or to the lintel cornice—and he in-



A Power Malleting Machine for Reducing Burr Edges.

troduced in many of our largest shops for managing and controlling the work which passes through them. An adequate system of this kind is particularly necessary in such shops as attempt to maintain a division of labor. In any establishment doing a business of any considerable size, a number of orders must necessarily be in hand at any given time. In order to bring each particular kind of work required in all the jobs which may be in hand at one time to the man or sets of men especially employed for it, a very comprehensive system of marks upon the work is necessary, or else almost endless confusion will result.

The first step in any system for this purpose is to indicate, by name or number, each

soldering room as explaining the manner of joining the several parts together; and, last, they are required at the building as a guide to the workmen in putting up the cornice. Accordingly, it becomes necessary to keep a record of the drawings belonging to each particular job, and to so mark them that they may be identified wherever found. Last, but not least, it is necessary to provide a system for assorting them and keeping them so that any sheet may be found on demand without the trouble of tedious search. These several requirements are variously accomplished in the different shops throughout the country, and in no two establishments is exactly the same system maintained. Our remarks and description, there-

dicates upon it the number of copies to be cut from it. In some cases this is done by marking directly upon the pattern by means of red chalk. We have also seen it printed upon the pattern by means of rubber stamps. The most satisfactory plan, however, that we know of is that of a small printed tag, gotten up in such a form as to require nothing but the figures being filled in, and which is attached to the pattern by means of mucilage. In addition to the pattern cutter's marking of patterns by either of the means described, it is necessary for him to maintain a record of those marks upon a slip, in order that it may be known how many pieces of each individual kind are required to complete the order in hand. His slip containing this record is gotten up something in this manner: It is entitled "Order No. 99." The general division in which he is working, we will say, is the main cornice. The first item in the main cornice, we may suppose, are the brackets. In turn each principal bracket is composed of a certain number of pieces of various shapes. Of some of these shapes but one piece enters into each bracket, while of others two or four pieces may be required. Accordingly, the number of each kind required for the whole number of brackets may not be the same. In a column provided for the purpose, opposite each particular pattern, is extended the entire number of pieces of that kind required in the whole order, and this general system is maintained through all the parts entering into that order.

Before describing other steps of this same general character which the pattern cutter is required to perform, we will follow up the use of the slip that we have just described. By means of the marks upon the pattern, the cutters produce the correct number of copies. Having the copies delivered to them in connection with proper stays or the drawings, the formers give them shape, and lastly the parts reach the solderers, who join them, using the drawings as a guide in construction.

Now, by division of labor, each of the several departments of the shop handles all work of its kind, and, hence, at one time a department may have parts of a number of orders. For example, in the department devoted to small forming, all the brackets, moldings and small pieces generally belonging to ten or perhaps twenty orders will be found at once, some of them completed, others in progress. It is, therefore, necessary to introduce a system of picking out the parts for orders from this department, that they may be conveyed to the soldering-room, which is the next step in course. By means of the slip which the pattern cutter has prepared, and which we have described above, a "sorter," as he is familiarly termed, knows exactly how many pieces of pattern No. 1 are required to complete the brackets in the main cornice of order No. 99. He hunts out these pieces, and in turn those of Nos. 2, 3 and so on, checking the slip exactly as the clerk in a store would check the items in a bill of goods by the merchandise piled up on the counter before him. Whenever that order is complete, or a certain part of the order is complete, the work is ready to go to the soldering-room. After the work has been brought to the soldering room, concerning which we shall have more to say hereafter, like use is required of this slip. For instance, Order 99 perhaps has twenty brackets. Those twenty brackets are delivered to the soldering room in pieces, but from the soldering room they will be delivered to the shipping department completed. By means of this same slip, which the pattern cutter provided, the shipper, or whoever has charge of this department, knows how many brackets to look for, and how many pieces of every other kind going into that order. By this means, it will be seen, a complete record of the progress of a job through the shop is maintained, and no confusion need arise if five hundred orders are in progress simultaneously. The number of men employed upon a job may be increased indefinitely without trouble or confusion, and, although it looks like a matter of expense to get up these slips in the amount of work originally expended by the pattern cutter, experience has demonstrated that much more is saved in each department through which the work passes than is expended in the one department of pattern cutting, to provide the record by which the work is directed.

The expert at Toronto, Ontario, in his report concerning water works, &c., says: "The crib at the water works wharf is in a very leaky condition," and "a great quantity of sewage finds its way into the water required for city use." "The cellar under the engine house is in a filthy condition; there were about 15 inches of filth upon the floor." "The Board found 40 places" in the engine house well "where water (sewage matter) was coming in, and the daily leakage of this well and at the end of the wharf cannot be estimated at less than 1,000,000 gallons." From which we judge that the people of Toronto are getting a pretty-fair share of sewage "in theirs."

The contract for the Seaforth (Ont.) Water Works has been let for \$8650 to a Guelph firm.

The National Association of Stove Manufacturers.

Proceedings of the Ninth Annual Meeting.

Thursday, February 5th.

The meeting was called to order at 10.30 a. m. by the president, Gen. Rathbone, who introduced Mr. Garrison, one of the oldest living founders.

The secretary then read a communication from Bussey, McLeod & Co., Troy, regretting that their firm could not be represented, and stating that they believed the cost of making stoves had increased from 40 to 50 per cent. within a year.

The chair next called for the report of the Committee on Order of Business, and the chairman, Mr. John S. Perry, reported as follows:

The committee appointed to report upon the suggestions contained in the address of our president, and to report subjects for the consideration of this meeting, respectfully present the following:

The committee feel deeply impressed with the importance of the questions of the cost of stoves for the present year, and the prices for which they shall be sold. From the best information they have been able to obtain, they are led to believe that such qualities of iron as are required for the manufacture of stoves are now held at \$40 to \$45.

It is also their opinion that nearly every other article which enters into the cost of stoves will be largely increased over the cost of 1879.

It is their opinion, also, that the stocks of stoves, both in the hands of manufacturers and the trade, are smaller than usual, and that the indications all point to a larger volume of trade in the future than in the past.

The committee believe that stoves have generally been sold during the past three or four years at prices which did not warrant the outlay of capital and preparations necessary to conduct the business of manufacturing with success.

They can discover no good reason why stoves should not pay a fair living profit, as well as other branches of manufacture.

In view of these and other considerations that might be mentioned, they recommend that the minimum price of the lowest class of stoves be graded at 6½ cents per pound, with the cost for the material used in mounting and ornamenting added thereto, and a reasonable profit on the same, and further, that the prices of stoves of better qualities be arranged, at the discretion of the manufacturer, at 7 to 9 cents per pound, according to the kind and quality and with the same additional charges.

The committee are aware of the uncertainty as to the future price of iron, like all other things which are hidden in the future, and while they believe that the average for the year will not fall below \$40, they have suggested the price of 6½ cents and upward, upon a basis of an average cost of \$35 during the present year.

In respect to the subjects alluded to by our worthy president, of the enormous and often unnecessary cost for patterns, and the superabundant amount of nickel plate with which, to a greater or less extent, stoves are now ornamented, the committee think that, while the subjects are interesting for discussion, and upon which some time might well be spent, it is not within their province to make any recommendation.

The question of the employment of convict labor is one that could scarcely be treated intelligently by this committee without an extended investigation into its various aspects and relations, to which most of the members have given but little attention. They are aware that three commissions, composed of able and reliable men, appointed by the States of Massachusetts, Connecticut and New Jersey respectively, have been engaged for several months past in taking testimony and critically examining into the many intricate questions involved in the subject, and that their reports have been or are about being made. When these reports have been carefully read and the details fully digested, this association will be better prepared to act intelligently on the subject than at the present time. The committee, however, are informed that not more than 10 per cent. of the number of State prisoners of New York, the same being something over 4000, are now employed upon any one mechanical branch of manufacture.

The committee cannot close this report without urgently requesting every stove manufacturer to make a close and careful investigation into the cost of making and selling his stoves, and collecting the amounts from such sales, that they may be able to corroborate the statements heretofore made to this association, or to show their fallacy. What is desired by all is simply the truth.

The committee strongly recommend that a meeting of this association be held at Saratoga Springs, early in the month of July next, and that a committee be appointed by

the president to make proper arrangements for the same.

JOHN S. PERRY.
JOS. W. FULLER.
J. B. RESOR.
W. H. WHITEHEAD.
CHARLES B. BOYNTON.
A. BRADLEY.

The report was accepted, and then on motion of Mr. Sard, the association voted to consider it in sections.

The secretary then read the first specific recommendation of the report as follows:

"In view of, &c., they recommend that the minimum price of the lowest class of stoves be graded at 6½ cents per pound, with the cost for the material used in mounting and ornamenting added thereto, with a reasonable profit on the same."

Mr. Sard moved the adoption of this recommendation.

The chair declared discussion in order and asked what was meant by the committee by the words "a reasonable profit" on the cost of materials consumed in mounting and ornamenting.

Mr. Perry: I think about 25 per cent.

Gen. Rathbone: Then it would be a profit added to the price of 6½ cents for the lowest grade of stoves. The material used in mounting I understand to mean nickel and matters of that sort, with 25 per cent. profit on such articles.

Mr. Spear asked whether there was not some profit in manufacturing stoves at 6½ cents.

Gen. Rathbone: The recommendation of the committee is that the 25 per cent. profit be upon the mounting material—nickel, bolts, rods, tin, copper, yellow metal, malleable iron, &c.

Mr. Sheppard thought the recommendation would not be as well understood by the trade at large as by the gentlemen present at the meeting. He feared it might lead to misapprehension as to its true meaning, and he thought it better to define it a little more clearly, and to say that 6½ cents should be the price of castings only.

Mr. Perry thought the suggestion of Mr. Sheppard a good one, and approved the idea of making the matter as clear as possible.

Mr. Sheppard: Of course this report will next week be spread before the whole trade of the country in *The Metal Worker*. That publication circulates throughout the length and breadth of the land, and goes into the hands of nearly all the dealers, and for their information this matter should be made as clear as possible. I suggest that the committee so modify the language as to show that the 6½-cent rate applies to the castings only, and for the lowest grade of stoves. I move an amendment to that effect.

Mr. Filley asked if the gentleman intended the stove to be mounted when he spoke of castings.

Mr. Sheppard said he did not.

Mr. Filley: The common or ordinary mountings, exclusive of nickel and that sort of thing?

Mr. Sheppard reaffirmed his understanding of the report, and suggested, for purposes of better definition, that 6½ cents should be the lowest price of common stoves mounted, and that all nickel trimmings and extras be added, with a reasonable profit. He also thought that the polishing and grinding should be charged extra. What they wanted to get at seemed to him to be to fix the minimum price at which the commonest grade of plain stoves should be sold, without mica, nickel, grinding or anything of that sort.

Mr. Cribben thought that the simpler they made the matter the better. The recommendation of the committee suggests the idea of too many profits, and the trade will begin to think our expectations unreasonable. We have stoves without nickel at one price and stoves with nickel at another price.

Some will charge 5 cents, some 2½ cents and some 25 cents on the mounting materials, and think they have made a reasonable profit. You are giving too much rope. I think the recommendation should read: "Stoves without nickel so much per pound; stoves with nickel so much additional." We all know that nickel costs one manufacturer about as much as it does another, and a little more or less makes no appreciable difference in the cost of a stove. We don't want to pass any resolutions here that we don't understand and can't explain.

Mr. Perry stated that the committee had endeavored to make the matter as simple and plain as possible. The term, "a plain stove," was certainly very indefinite. It seemed to him that nothing could be more specific than a recommendation that the minimum price be based on the weight of castings.

We will suppose that the amount of cast iron in a given stove is 200 pounds. If the price be fixed at 6½ cents, the basis price of that stove is \$13. If the rods and bolts and various other things that are put upon it in mounting cost \$1, and 25 cents be added, it is \$1.25, making the price of the stove \$14.25. He thought it very well to insert the words proposed by Mr. Sheppard, "for the castings only;" but if it was deemed best to include mountings, he thought the basis price should be made 7 cents instead of 6½.

Mr. Whitehead thought that all objections could be met by a slight change of phraseology, and instead of saying the cost of

nickel with the profit added, that the cost of nickel be left out and the price of nickel added. There was some objection to putting the word castings too prominent at 6½ cents when they wanted to sell parts of stoves at more than that.

Mr. Spear urged that the expense of nickel be added. He had a stove that he had been trying to nickel "up to the handle," but everybody told him it was too plain. They wanted \$8 or \$10 worth of nickel on it to sell it. He thought if the price of nickel could be charged extra, as it should be, it would be to the interest of the trade.

Mr. Fuller thought the committee could revise the wording of this paragraph with advantage. He thought Mr. Sheppard had the right idea and could, perhaps, frame an acceptable substitute.

Mr. Cribben thought the question of jewelry was not fully understood. A good many members of the association had turned their foundries into jewelry manufactures, and as there was present an expert from a large jewelry manufactory in Connecticut, it was perhaps better to discuss this subject fully then and there.

Mr. Richardson urged that the words "cook stoves" be inserted in the recommendation of the committee. In this part of the country a great many cheap heating stoves were sold, weighing from 75 to 125 pounds, and as they were known as "cheap stoves," he thought it important that the words "cook stoves" be inserted in the resolution to avoid any misconceptions on the part of the trade.

Mr. Perry said the recommendation specified the "lowest class of stoves," and did not use the term "cheap stoves." He thought the basis price should apply to all common stoves, and that an attempt to draw distinctions would lead to confusion.

Mr. Sheppard moved to amend the recommendation of the committee by inserting after the word "class" the words: "Of plain stoves, without grinding or polishing or nickel trimming, 6½ cents per pound," and then strike out the balance and insert: "And that all grinding, polishing and nickel trimming shall be charged extra."

Mr. Sard thought this change in phraseology changed the whole meaning of the recommendation. It was not simply the nickel they had designed originally to add, but other extras—door linings, bolts, rods and all that sort of thing, all of which were included in the recommendation of the committee under the name of mountings. He thought that if they said mountings and trimmings it would cover everything.

Mr. Clark wanted to know if the price named did not include these same articles.

Mr. Sard said he understood the recommendation of the committee to be that the 6½ cents was the price of the castings which entered into a stove weighed before mounting, and that every article outside of the castings was included in the mountings.

Mr. Perry said that was his idea of the matter, and, he believed, the opinion of the committee.

This part of the committee's report was again read by the secretary.

Mr. Cribben did not think the phraseology good, inasmuch as a stove was not a stove without rods and bolts and whatever else was necessary in the mounting.

Mr. Perry replied that he perfectly understood that a stove was not a stove until it was made, but he saw no difficulty in first estimating the value of its castings and then of its mountings and adding them together. His firm never made a stove without fixing the price just in that way, taking the average weight of its castings, and then adding the value of every item, however small, with an allowance of 25 per cent. on the net cost of the mountings. He did not know of any other way of figuring the cost of a stove.

Mr. Cribben thought Mr. Perry's plan good for his house, but that the trade at large wanted something simpler. It should be stated that a plain stove, mounted, was worth 6½ cents per pound, with extra charge for extra trimmings.

Mr. Barbour stated that the house he represented weighed their stoves after they were set up, and that they charged the same for bolts and rods as for castings.

Mr. Sheppard pursued a very different course. When he wanted to know what a stove cost him, he began at the bottom and carried the calculation through every item.

Mr. Barbour said he did the same, but they were then talking about a stove, and he wanted to know whether that term meant the pieces separately or together after proper mounting.

Mr. Sheppard offered the following as a substitute for the recommendation of the committee:

"That the minimum price of the lowest class of stoves be graded on the basis of 6¾ cents per pound for plain stoves, without grinding, polishing or nickel trimming, and that all extra trimming, grinding, polishing, nickel ornamentation and mica be charged extra."

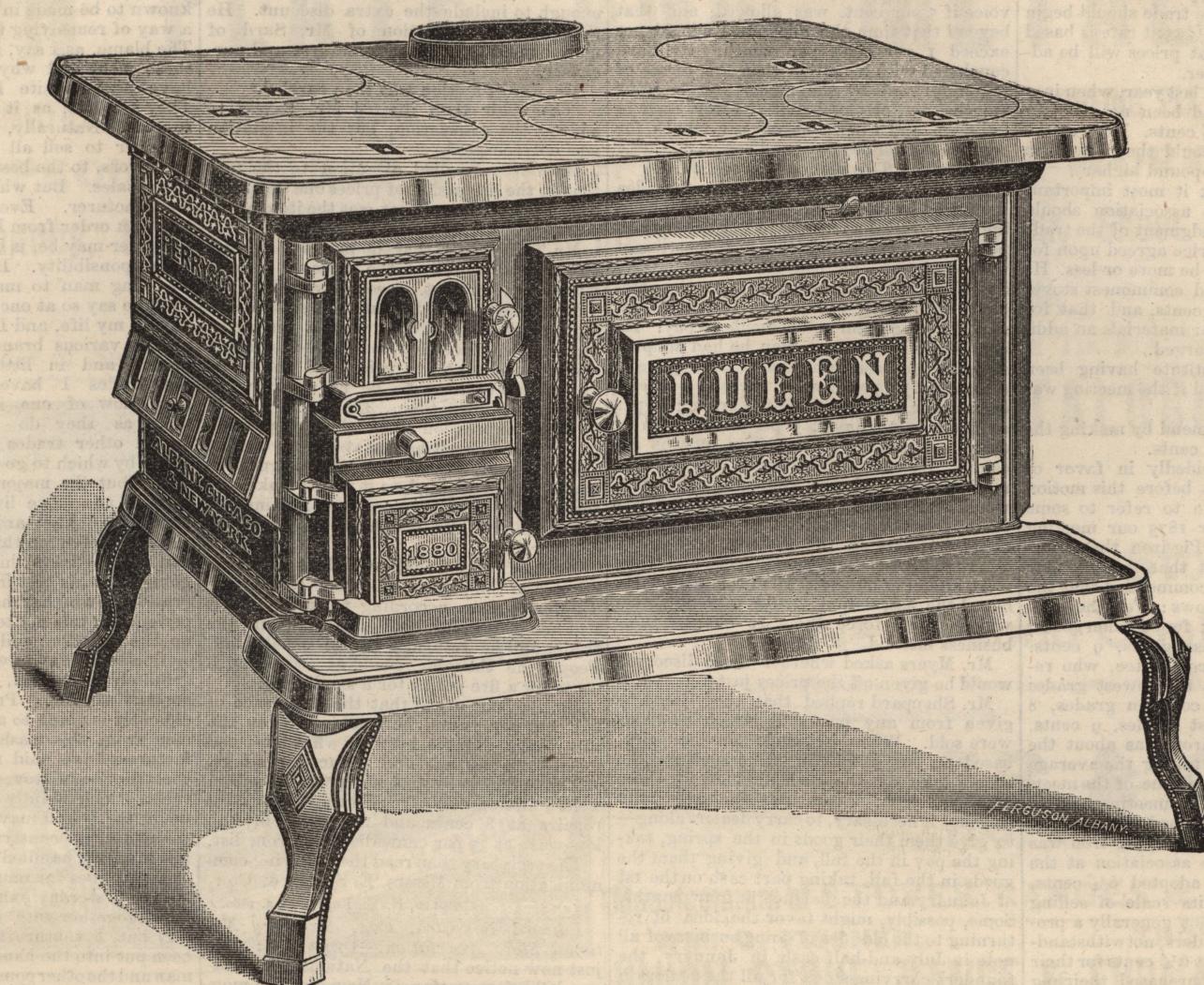
Mr. Filley wanted to know at what rate extra. The words "charged extra" meant nothing.

Mr. Myers thought it impossible to define cost so accurately as to fix the prices for extras rigidly. He favored Mr. Sheppard's substitute.

Mr. Richardson thought the trade alto-

THE FIRST NEW PATTERN FOR 1880.

THE HANDSOMEST RANGE OF THE CLASS IN THE MARKET.



THE QUINCY.

SINGLE OVEN,

SAME WITH CLOSET,

SAME WITH RESERVOIR.

An improved "Pouch Feed" for soft coal. Extra large flues and a perfect draft in the poorest chimney. A splendid baker. Every Range guaranteed.

PERRY & CO.,

NEW YORK CITY.

ALBANY, N. Y.

CHICAGO, ILL.

gether too timid about raising the price. When the price was fixed at 6 cents iron was about \$22 per ton. The extra half or three quarters of a cent per pound now proposed would hardly cover the increased cost of the iron. Iron would experience another advance as soon as the trade had exhausted their present supply, which, as nearly as he could learn, was equal to from 60 to 90 day's consumption. They would sell as many goods at 7 cents as at 6½ cents when trade opened at the fall. The trade should begin to understand that the 6½-cent rate is based on iron at \$35, and that prices will be advanced if iron goes higher.

Mr. Barbour said that last year, when iron averaged \$22, there had been no profit in stove making at 5 to 5½ cents. How, at the present price of iron, could they afford to sell at one-half cent per pound higher?

Mr. Sheppard thought it most important that the action of the association should command itself to the judgment of the trade at large, than that the price agreed upon for a minimum basis should be more or less. He thought the cheapest and commonest stoves made were worth 6½ cents, and that for every addition of labor or materials an additional price should be charged.

Mr. Sheppard's substitute having been seconded, the chair asked if the meeting was ready for the question.

Mr. Resor moved to amend by making the price 6½, instead of 6¾ cents.

Mr. Sard: I am decidedly in favor of conservative action, but before this motion is voted on I would like to refer to some precedents. In the year 1873 our meeting was held in February. Pig iron then averaged \$42.75 per ton. At that meeting our president, Mr. Perry, recommended that the price of stoves be as follows: For the commonest stoves, 7½ cents; for common goods, 8½ cents; for first-class goods, 9 cents. This was referred to a committee, who reported as follows: That the lowest grades should be 7¼ cents; common grades, 8 cents; and the highest grades, 9 cents. Please remember that iron was about the same price then as now, taking the average of the year, though at the time of the meeting it was about \$50. The meeting held in the summer of 1873 reaffirmed these prices. In 1875 the average cost of pig iron was \$22.50 per ton, and the association at the beginning of that year adopted 6½ cents, 7 cents and 8 cents as its scale of selling prices. The year was not generally a profitable one for stove founders, notwithstanding the fact that they got 6½ cents for their commonest stoves, and purchased their pig iron at \$15 per ton cheaper than is now possible. So, while we may think 6½ cents a very high price, if we compare it with what we have received in past years we shall find it is really low.

Mr. Hill spoke in favor of the recommendation of the committee, but approved Mr. Sheppard's way of expressing the idea. He hoped that whatever the association agreed to do the members would carry out in good faith. He thought that every intelligent dealer would be content to pay more than last year when he knew, as he must, that goods cost more. Consumers are better able to buy stoves this year than they were last year. He did not think that prices should be based on iron at \$50 when it was only \$40; but if any manufacturer was satisfied that 6½ cents would not pay him, he would do well to charge more.

Mr. Jewett said he was satisfied with the recommendation of the committee as originally presented, but he also approved Mr. Sheppard's substitute. He had no doubt it could be adopted with entire safety.

Some desultory discussion followed, after which Mr. Sheppard's substitute for the recommendation of the committee, as amended by Mr. Resor, was carried.

The secretary then read the following recommendation of the committee: "And, further, that the prices of stoves of the better qualities be averaged at the discretion of manufacturers at 7 to 9 cents per pound, according to the kind and quality, and with the same additional charges."

This recommendation was adopted without debate.

The secretary then read the next, as follows: "The committee are aware of an uncertainty as to the future price of iron, like all other things that are hidden in the future, and while they believe that the average for the year will not fall below \$40, they have suggested the prices of 6½ cents and upward upon the basis of an average cost of \$35 during the present year." This was adopted as the sense of the meeting, as were the succeeding recommendations of the committee.

With regard to the meeting recommended to be held early in the month of July next at Saratoga, Mr. Filley suggested that a date should be selected not later than June 1, for the reason that prices of iron and labor are known at that time, and therefore that prices can be better fixed for the fall trade than at a later date.

Mr. Myers suggested the second Wednesday in June.

It was finally decided to hold the summer meeting subject to the call of the president.

Mr. Sard called attention to the fact that nothing had been said with reference to terms. He considered this a very important question. In some cases members of the association have sold goods in the spring on

longer than four months' time. He thought that at the present price of money 5 per cent. off for cash in 30 days, which was equivalent to 20 per cent. per annum, was a very high rate of interest to pay. He thought that most manufacturers would rather get customers who would pay in four months than take off the cash discount. The poor man takes the time and the sound buyer pays the cash. He favored payments being made within ten days of date of invoice if 5 per cent. was allowed, and that beyond that time the allowance should not exceed 1 per cent. per month. Mr. Sard concluded with a motion that the terms of sale approved by the association be four months, net, or 5 per cent. off for cash in ten days, and 1 per cent. off per month for payments after ten days and before maturity of account. This motion was seconded.

Mr. Sheppard did not believe in the idea suggested by Mr. Sard. He favored bringing the business as nearly to a cash basis as possible. As stated at the last meeting of the association, he had started out singly and alone in September, 1875, on the principle of making people pay for the goods, and of giving them inducements to pay. He considered it the best plan he had adopted since he had been in business. He gave a discount of 10 per cent. for cash on receipt of goods or accompanying the order; 8 per cent. off in 30 days; 5 per cent. off in 60 days, and nothing off on a four months' account. He extended no credit beyond four months. He did not know that the plan would work in all parts of the country, but there were some eighteen or twenty firms doing business in the section of country where his goods were mostly sold, and they were all doing business upon this plan. He hoped the association would take no action which would force them to change their business method.

Mr. Myers asked whether these discounts would be given off the prices just adopted.

Mr. Sheppard replied that they would be given from any prices at which his goods were sold. When he made his list price, based on the action of the association, he should take off the cash discount for those who pay cash. Some manufacturers may consider it necessary, to carry dealers along—to give them their goods in the spring, taking the pay in the fall, and giving them the goods in the fall, taking part cash on the 1st of January and the balance in four months. Some, possibly, might favor the idea of returning to the old idea of doing business of all note in July and half cash in January, the founders carrying stock for all the dealers in the country and taking all the risks and chances of the business. For his part, he did not believe in that way of conducting a business. If he made goods, he wanted to sell them and get the money for them within a reasonable time. If he offered a man a cash discount, the man would take it if he had any bottom to him at all, and thereby make two profits. He preferred a larger discount for sharp cash. Then he always knew what he was doing.

Mr. Hill: This 6½ cents, as established, will be your list. Off of that you will take 10 per cent?

Mr. Sheppard: I do not think we shall put it at 6½ cents. With the advance in prices, what are the dealers all over the country going to do? It will take pretty nearly twice as much money to handle the same amount of goods as it required last year. In the face of this fact, is it wise to push our goods out into the hands of the trade and take notes scattered all over the land, which, when pay day comes, will not be met, because they have no money, thus running into a system of bankruptcies of the kind we have just gone through? We had better stay nearer a cash basis.

Mr. Tefft: In the West they have always been in the habit of buying stoves upon time, with a discount of 5 per cent. for cash in 30 days. If we give 10 per cent. discount, I am afraid we shall be figuring profits on the wrong side.

Mr. Sheppard: For what portion of your sales do you get cash?

Mr. Tefft: Probably one-half or two-thirds.

Mr. Sheppard: Well, you have a better class of people to deal with than we have.

Mr. Tefft: I do not like the idea of giving 5 per cent. discount. Our best customers are the ones who take advantage of this discount and who do not care to give their notes. A discount of 5 per cent. for cash in 10 days would suit the trade much better than a discount of 10 per cent. and a longer price.

Mr. Sheppard: I know our experience upon a 5 per cent. basis was that we did not get upon an average more than 10 per cent. of our bills cashed, while upon the principle I have since adopted and which others are following—in fact, all the merchants of Philadelphia and vicinity are imitating us in this respect—we get more than two-thirds of our settlements inside of 60 days. I would rather take the chances of a little larger discount than those of extending time and losing bills.

Mr. Myers liked the motion of Mr. Sard fixing the 5 per cent. discount at 10 days. He thought no one from the West felt as if he could make a discount of 10 per cent. from the prices just adopted. His house had for some time past demanded notes from its customers at the expiration of 30 days.

This plan had induced many to pay cash who had never thought of doing so when their bills were allowed to remain upon open account. He thought that if manufacturers would adopt this principle and rigidly enforce it, demanding cash or note within 30 days, it would soon bring a large proportion of their business to a cash basis.

Mr. Barbour failed to see in the plan suggested by Mr. Sheppard any advantage to the customer, as he must make his list high enough to include the extra discount. He thought the suggestion of Mr. Sard of more benefit to both manufacturer and purchaser.

Mr. Sard's motion was then carried.

The chair then invited Mr. Bayles to address the association, but the invitation was not accepted.

Mr. Barbour called attention to the fact that in the discussion of prices one thing had been neglected, and that was the item of repairs.

Mr. Tefft moved that the prices of repairs be 8 cents, and that the price of hollowware be 35 per cent. discount from list.

Mr. Barbour said that at the Detroit meeting he had undertaken to press a resolution making two prices for castings—the heavy castings to be at one price, and the lighted plate castings to be at another. It was voted down then. He would like to have an expression upon that proposition now. For himself he was still in favor of it.

Mr. Myers hoped that the suggestion would not be adopted, as it would make confusion in sales. Every one would claim that the casting he had bought belonged to the cheaper class.

Mr. Tefft stated that he had at one time attempted the plan of charging castings at different prices, according to kind, but it had made a great deal of trouble in the trade, and he returned to the usual plan. People, he thought, would as soon pay 8 cents for a fire-pot as for a small door.

Mr. Barbour urged that the difference of one cent per pound be made between the two classes—that is, between what is termed faced-plate castings and unfaced castings. His amendment to that effect was lost. Mr. Tefft's motion was carried fixing the price of repairs at 8 cents and the price of hollowware at 35 per cent. discount from list.

The secretary then read the following communication from Messrs. E. Sperry & Co:

SHERMAN, N. Y., February 3, 1880.

Edward Bowditch, Esq., Secretary National Stove Association.—DEAR SIR: We just now notice that the National Association holds its meeting in New York to-morrow. We are strangers to you, but not to all the manufacturers. We do not know how long the meeting will continue, but if this reaches you in time, and should the question of ornamentation or wide, polished edges arise, we wish to say through you just this, viz.: that we, as retailers, are getting heartily sick of so much ornamentation as most manufacturers are putting on the newest and otherwise most desirable cook stoves. There have been within the last two or three years many desirable improvements, but we do not think so much ornamentation one of them. Our people do not need it and cannot afford to pay for it. Wide, ground edges look well when in sample room, but we consider them a nuisance for more reasons than one. First, as usually made they are not strong enough to bear transportation. More than two-thirds of the cook stoves with wide edges purchased by ourselves during the past year have been more or less broken while in transit. This may be really a good thing for manufacturers, because they can furnish the repairs needed at a profit, but it is a serious thing for a retailer. Every retailer understands that a piece knocked out of a broad edge, no matter how small, ruins the sale of the stove—that a new casting must be sent for and put in before the stove can be offered for sale. Now, we do not suppose that manufacturers desire that stoves should be broken in transit for the sake of furnishing repairs, but that they make them so for the reason that broad edges are all the style. We think it is time that the manufacturers talked the matter up, and if wide edges must be made, that they should be thoroughly strengthened and packed in a manner to protect the retailer from so great a burden—for it is a burden too grievous to be borne. At least, that is our experience. No doubt every manufacturer knows that polished edges and nickel ornamentation are no improvements upon cook stoves after having been in use for a few months. They cannot be kept bright and clean by the average housekeeper.

Now, sir, why not talk the question up and each manufacturer do what he can toward a reform. Put on all real, substantial improvements, but leave off worthless ornamentation.

Begging pardon for presuming to trespass upon your time, we are, respectfully yours,

E. SPERRY & CO.

Mr. Filley: That man has good sense. (Great laughter.)

Mr. Corry: Mr. President, in one part of your address, yesterday, something was said in regard to traveling salesmen. I would be pleased to hear that part of it read again. I think there are some very important points in it.

The secretary then read the extract, and Mr. Corry continued his remarks as follows:

I was asked to say something last evening at the banquet relative to traveling salesmen. (Laughter.) I said I did not know anything about traveling salesmen; but in thinking the matter over later, I remembered your reading the remarks alluded to. The poor fellows who go out on the road often get away from all construction or instruction—are all the time blamed for everything. You, Mr. President, have made the first suggestion, and the only one I have ever known to be made in these meetings, as to a way of remedying the condition of things. The blame, as I say, is all the time put upon these men, and why? Because they never have any definite instructions to go by. They are left, as it were, to their own resources. Naturally, every traveling man is eager to sell all the goods he can. He endeavors, to the best of his ability, to make large sales. But who fills his order? The manufacturer. Every manufacturer who takes an order from his salesman, whatever the order may be, is the man who assumes the responsibility. If he does not want his traveling man to manage as he does, why don't he say so at once? I have lived in the city all my life, and I know many traveling men in various branches of business, both in big and in little houses. Out of all the trades I have ever known, I do not know of one in which people run wild as they do in the stove trade. In all other trades there is always some guide by which to go—some definite instructions—but the majority of traveling salesmen in the stove line do not have any instructions. They are sent out to sell goods. That is the main thing. The more a man can sell, the larger his pay. Naturally, he is going to do his best in that direction. If the president, who has had a great deal of experience in this matter, will properly bring up the question, and indicate to the association some way in which these men can be definitely instructed, he will render an important service. Probably a great deal of difficulty is going to arise for the traveling men from this clashing of prices. Manufacturers have paid much attention to the construction of stoves, but the art of selling them, which is fully as important, has been neglected. You may do what you please in the matter of construction, but if they are not properly handled in a business way, all the care goes for naught. One of the gentlemen yesterday exhibited a *Venus de Milo* stove, together with another drawing (laughter) but, I venture to say, had the *Venus* been put into the hands of an ordinary salesman and the other construction into the hands of an expert, *Venus de Milo* would disappear overboard. (Laughter.) Not a living show for it. Another speaker went away back where the sun commenced to shine, and got the lines all laid down; but if you get everything all fixed and right, another party steps in and ruins all. That is the party who uses it—Bridget. She is the end of it. There are always other things entering into the subject than the mere making of the stove. I only open the matter because I think it is vital, and that its importance is going to be more and more recognized in the future. Mr. Spear says his salesmen say, "I can't sell at that," and "So and so's man is selling at such a price." But if the suggestion is made to your salesman that "these are the prices," and every man knows that you mean what you say, he will have a guide to go by. Otherwise he goes off on his own account and sells haphazard. The traveling salesman is not to blame. If you put inferior men on the road you must suffer the consequence. A man who does not know his business—don't know how to get along—will make terms and endeavor to get himself in when he has no foundation except that he has undersold some one else. A man may be a good salesman and sell a great many goods; he may be a much better salesman and not sell a great many goods. That is all. (Laughter.)

Mr. Filley said he had followed that plan for years, and no salesman in his employ had had any discretion allowed him in the matter of price.

Mr. Corry was glad to hear it, but that was not the custom of the trade. If travelers were given definite instructions everything would go easy; otherwise not.

The chair, in response to a request, discussed this subject ably and intelligently, and elaborated the general remarks of the opening address of the day before.

Mr. Sheppard moved a vote of thanks to the stove manufacturers of New York for courtesies and to the proprietors of the hotel for the use of the room in which the meeting was held. The motion, though unconsciously satirical, was carried.

After passing a vote of thanks to *The Metal Worker* for full and accurate reports of its meetings during the past year, the association adjourned to meet in New York on the first Wednesday of February next.

Currier's Patent Roofing.—The Eureka Iron Roofing Co., whose New York store is at 78 Beekman street, are manufacturing Currier's patent iron roofing, which they claim is, in several important particulars, superior to any other iron roofing in the market. By having the roofing sheet, fastening cleats and caps all in one piece, it presents an unbroken surface of equal resistance in all its parts. By the particular

PHELPS, DODGE & CO.,

Nos. 11 & 13 Cliff Street, NEW YORK.

TIN PLATE AND METALS.

ALL SIZES AND QUALITIES OF CHARCOAL AND COKE TIN PLATE. EXTRA QUALITY STAMPING PLATE. ROOFING PLATES, ALL GRADES.

SPECIAL BRANDS OF ROOFING FOR CHOICE WORK.

Pig Tin, Antimony, Lead, Spelter, Sheet Zinc, Ingot Copper, Sheet Copper, Sheet Brass, Wire,

RUSSIA SHEET IRON, COMMON, CHARCOAL AND POLISHED IRON.

Solder of Superior quality.



SAVE THE TABLE CLOTH
BY USING THE
Patent Table Tray
FOR CHILDREN.

MANUFACTURED BY

NEWARK TEA TRAY COMPANY,

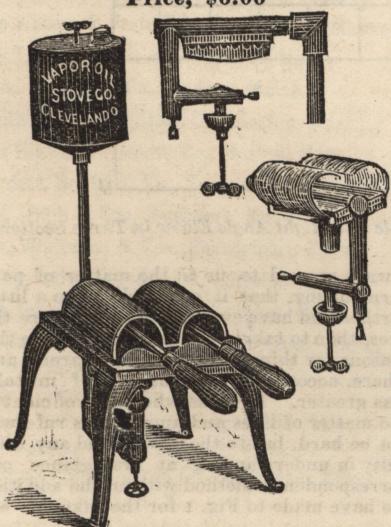
Newark, N. J.

Send for price lists and discounts for full line of Oval Tea Tray



Soldering Furnace.

Price, \$6.00



Will Burn Coal Oil or Gasoline to perfection with our Burners.

The best in market; occupies less space than any other. Its advantages are, simplicity, durability and costing less than other heaters. Is far superior to charcoal; the coppers do not require to be tinned as often; it can be lighted and in operation in a minute; the flame is adjusted by turning the valve, therefore wasting no time or fuel. It completely envelopes the irons, and the intensity of the heat is so great that it will heat the largest sized irons. Address

VAPOR OIL STOVE CO., CLEVELAND, O.

VANDERVOORT'S



CEMENT
STOP ALL WATER LEAKS
On roofs of all kinds, around chimneys, copings, sky-lights, joints and seams in wood and iron, laying slate roofs, copings, and any place required to be made water tight. Ready for use with trowel; does not crack, chip off or run. Price, in tubs and barrels, 5 cents per pound. Special rates by quantity. Cans for family use, retail, \$2.40, \$4.20 and \$7.20 per dozen. 25 per cent. off.

Champion Stove Cement, composed of fire-proof ingredients, ready for use, is the best ever manufactured for cementing seams and joints in stoves and mounting the same. Price, 4 cents per pound, in kegs and barrels. Special rates by quantity. 15-lb. can sent for \$1.

Iron Ore Furnace Cement, for setting furnaces and packing joints in same, making them gas tight. Forms like iron, and contains no oil. Prices in 5 and 12-lb. cans, packed, 50 pounds upward, 8 cents per lb. Special price in barrels. 12-lb. cans sent for \$1.

Vandervoort's Cement and Paint Works,
116th Street and East River, N. Y. City.

TO

OIL STOVE MANUFACTURERS.

The adoption of the **STERLING CHEMICAL WICK** by any make of stove will largely increase its sale. The wick need not be touched oftener than once in one or two months, and does away with odor, smoke, trimming and cinders.

Extract from one of the many letters of commendation we have had from experts.

FLORENCE, MASS., Dec. 22d, 1879.
We are ready to concede that the wicks are all that you claim for them. We shall use this wick entirely for the Florence Oil Stove for 1880.

H. P. DIBBLE, Treas.

WOOD & CO.,

General Selling Agents. 85 Madison St., CHICAGO.
N. B.—No connection, past or present, with any Red Felt or so called "Perpetual" Wick.

J. HARE & CO.,

Stove Pattern Works

469 River St., Troy, N. Y.

All kinds of Patterns belonging to the stove trade made to order.

JOHN HARE, HENRY B. DEGENAAR
GEO. W. WILLIAMS.

HIRAM J. MANN, Superintendent.

"AUSTIN'S" PATENT
EXPANDING
CONDUCTOR
OR
RAIN-SPOUT,
Manufactured of
Galvanized Iron and all Sheet Metals.
Regular Sizes, 2, 3, 4, 5 and 6 Inch.
AUSTIN, OBDYKE & CO.,
SOLE MANUFACTURERS,
1705 and 1725 Chestnut Street,
PHILADELPHIA, PA.

By a recent decision of the U. S. Circuit Court, the exclusive right to manufacture expanding conductors is secured to WILLIAM AUSTIN, and all parties making, selling or using expanding conductors other than Austin's will be held liable by suit.

PRINCIPAL AGENTS.
M. Hallday, New York City; S. D. Hicks & Son, Boston, Mass.; Sidney Shepard & Co., Buffalo, N. Y.; Geo. W. Pitkin & Co., Chicago, Ill.; Wasson & Martin, Albany, N. Y.; Hoy & Co., Albany, N. Y.; McLeod, Reardon & Co., Troy, N. Y.; W. H. Scott, Portland, Me.; Kittredge Cornice Co., Salem, Ohio; J. W. Jordan, Worcester, Mass.; R. G. Carpenter & Co., Wilkesbarre, Pa.; Miller Iron Co., Providence, R. I.

FILING AND FITTING a specialty. Established 1867. Work done by contract or by the day.

ALBERT BROWN,
85 Ferry Street, Troy, New York.

STOVE PATTERN

Winthrop Furnace, Winthrop Range, Winthrop Base Burner, Winthrop Oval Parlor, Winthrop Air-Tights and Cottages.

A full line of first-class goods. It is our aim to be unsurpassed in the quality of our product, and our specialty to make only first-class work and sell it to the trade at the lowest possible prices.

Office and Foundries at North Dighton, Mass.

OUR SPRING CATALOGUE, 1880, OF New Ranges, New Coal Cook Stoves, New Wood Cook Stoves,

Will be ready about February 10th. We are confident we shall show the trade new and novel features in Ranges and Stoves.

POTTER & CO., TROY, N. Y.,

Manufacturers of STOVES, RANGES & FURNACES.

WM. G. FISCHER.

THOS. B. DIEHL.

UNION STOVE, RANGE & FURNACE WORKS.



The Celebrated Wrought-Iron GRAND ACTIVE RANGES.

Made in 892 Varieties.

Adapted to Family use, Restaurants, Hotels, Public and Private Institutions.

WM. G. FISCHER & CO., Manufacturers,
CINCINNATI, OHIO.

Catalogue sent on application.

DIGHTON FURNACE CO., MANUFACTURERS OF FURNACES, RANGES AND STOVES, Sinks and Hollow Ware,

to suit any market in the world. The celebrated

Winthrop Furnace, Winthrop Range, Winthrop Base Burner, Winthrop Oval Parlor, Winthrop Air-Tights and Cottages.

A full line of first-class goods. It is our aim to be unsurpassed in the quality of our product, and our specialty to make only first-class work and sell it to the trade at the lowest possible prices.

Office and Foundries at North Dighton, Mass.

FILING AND FITTING a specialty. Established 1867.

Work done by contract or by the day.

ALBERT BROWN,
85 Ferry Street, Troy, New York.

form of construction employed there are no exposed nails, rivets, screws or other fastenings, which certainly is a very important advantage, and one which all roofers, we think, will duly appreciate. The surface presented by the roof is one against which both wind and rain may expend all their force without finding an opening at which to commence their work of destruction. In manufacturing the roofing the sheets are folded so as to form both side and cross seams in the one piece, and it is claimed that it is the only roofing in the market which is entirely ready to apply to the roof when it leaves the factory. By its peculiar construction less labor, it is also claimed, is required in laying it than in any other iron roof in the market. It is specially adapted to warehouses, farm and mining buildings, &c. This same company also manufacture a siding which, like its roofing, receives two coats of metallic paint before it leaves the factory, and forms therefore a desirable fire-proof covering for the sides of buildings.



Short Rules for Elbow Patterns.

From G. H. F., Topeka, Kan.—Although I have been a reader of *The Metal Worker* only six months, I look upon it as an old friend, and wish it came oftener. I think your correspondents' column is doing a great amount of good. Education is what "we tanners" need.

I have watched with interest the series of articles you have been publishing on cutting elbow patterns, hoping that something would be given which would be very short, yet practical.

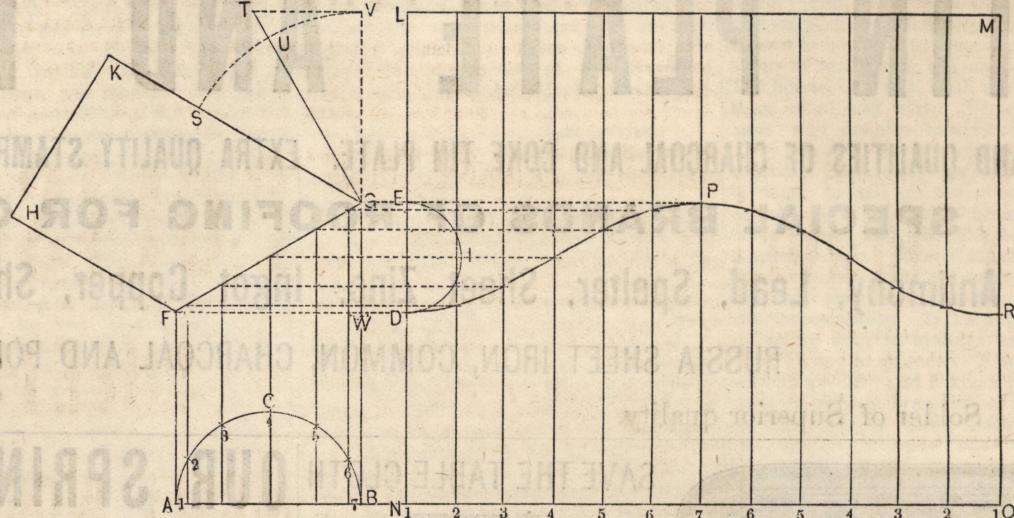
equal to the diameter of the elbow. Bisect D C. Divide D K into the same number of parts there are miters or angles in the elbow. Draw the line B H, which produce until it meets the line F G at E. Draw the semicircle D I E, and proceed as in Figs. 1 and 2.

In Fig. 4 is illustrated the universal practice of making two cuts through the stretch-out of elbows. This I think necessary. By

draws B E, bisecting the angle D B C, as shown upon the arc D C in the point H. He produces B E till it meets the side of the pattern F G in the point E. By this means he establishes the distance D E, which in Fig. 2 is equal to D E of Fig. 1.

Now, the reason for this at first sight is not apparent. Let us see, by examination of Fig. 1, what he has really done. We

number of equal parts. Hence, if D I E of Fig. 2 be divided into the same number of equal parts, and lines be drawn through the points across the pattern, as were drawn through D I E of Fig. 1 in cutting the patterns there shown, like points of measurement will be obtained. Therefore, in cutting his pattern in Fig. 2, he divides D I E into any number of equal parts (in this case,



Elbow Patterns.—Fig. 1.—The Usual Method of Obtaining the Lines in a Pattern Intended to show the Application of the Short Rule.

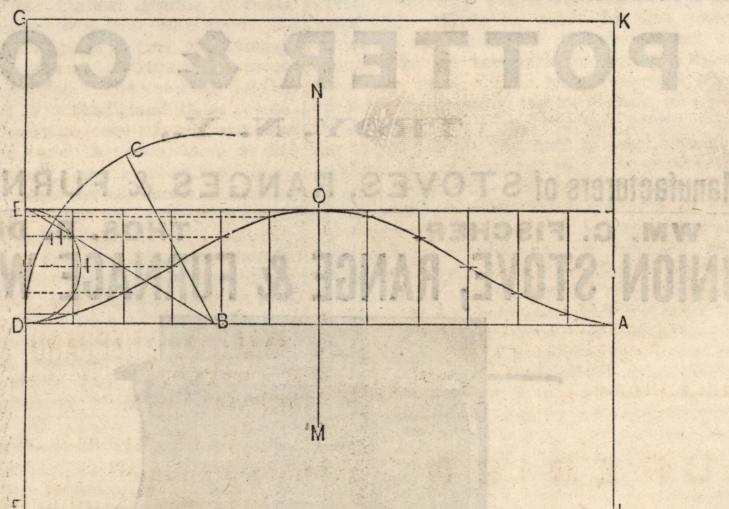
being careful in making a pattern it is necessary to make but one whole cut, cutting the ends off of one part of the stretch-out, as shown in Fig. 5. The line A B C shows how the pattern can be cut so as to allow the marker to pass around freely.

I think the above method of laying out elbow patterns on the stretch-out directly, will be of great use to the readers of *The Metal Worker*.

have seen that the angle A B C in Fig. 2 is equal to B G K of Fig. 1. If we produce B G of Fig. 1, as shown by B V, we have a line in it equivalent to A D of Fig. 2. The point G, then, in Fig. 1, is the same as B in Fig. 2. From G in Fig. 1, with radius equal to A B, to which also D B of Fig. 2 was made equal, as will be seen above, describe the arc S V, which will be the equivalent of D C of Fig. 2. Bisect S V in the same manner as D C, obtaining the point U, which is equivalent to H of Fig. 2, and from this point draw the line G T into the

for the sake of illustration, into the same number of spaces as were employed in the first figure), then divides each half of the space D A, which is the stretchout of the pipe, into the same number of equal spaces. The intersections of the lines, as shown by the points in D O A, must necessarily be the same as those in the line D P R of Fig. 1.

We consider this quite an ingenious plan of avoiding the drawing of an elevation of the elbow, but we very much doubt if all our readers will think it saves labor. It has

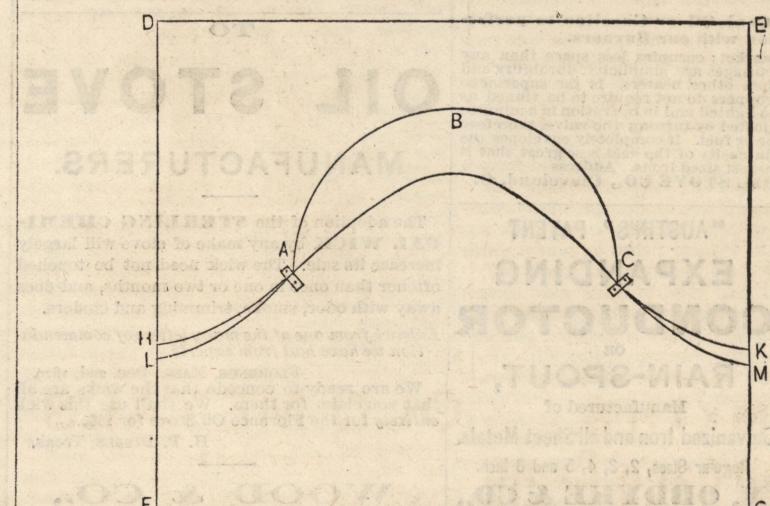


Elbow Patterns.—Fig. 2.—Application of the Short Rule to the Elbow shown in Elevation in Fig. 1.

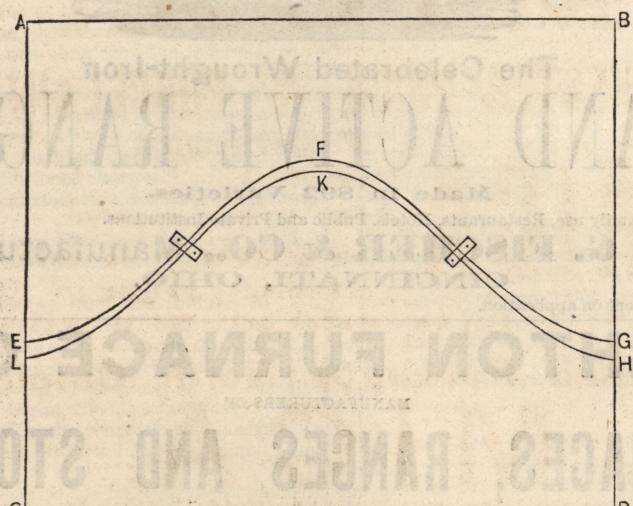
I inclose a method I have used for several years, and find it a very satisfactory one for cutting elbows in straight pipes. It does away with drawing the elevation of the elbow, and yet is geometrically correct.

To fully illustrate the method, I give in Fig. 1 the usual method of obtaining the points in the stretchout. In Fig. 2, let A B C be the angle of the elbow, the radius B D being equal to the diameter of the elbow. Bisect D C and draw the line B H, which

From the point D he has drawn D A, cross angle. From the point V, in the line B V, always seemed to us in the matter of pattern cutting, that it was well to go a little further and have everything plain before the eyes, than to take some short road where the reasons for things were not so apparent, and where, accordingly, the danger of mistake was greater. To those who are proficient in the matter of lines and angles, this rule will not be hard, but to those who find any difficulty in understanding at first glance our correspondent's method without the addition we have made to Fig. 1 for the sake of ex-



Elbow Patterns.—Fig. 3.—Application of the Rule to a Right Angle Elbow in Three Sections



Elbow Patterns.—Fig. 4.—Usual Method of Constructing Shop Pattern, showing Lines of Double Cut.

produce until it meets the line F G at E. Draw the semicircle D I E, which divide into any number of equal parts; then proceed to get the points in the stretchout as in Fig. 1.

In Fig. 3 I give the method of getting the points in the stretchout of elbows of any number of pieces without making an elevation of the elbow. Let A B C be the angle of the elbow desired, the radius B D being

the pattern-piece. Upon this line he sets off D B, equal to the diameter of the pipe in which the elbow is required to be made, or, what is the same, equal to A B of Fig. 1. He then constructs the angle A B C, which he sees is equal to the angle of the elbow. By this he means that A B C is equal to B G K of Fig. 1. Now, in Fig. 1 the miter line F G bisects the angle B G K; therefore, from B, the vertex of the angle A B C, he

structed to obtain this, is the same as V G T, or W F G of Fig. 1.

Now, having obtained this dimension D E, he draws the semi-circle D I E, which, it will be seen, is the same as D I E of Fig. 1. Since the spaces in D I E of Fig. 1 were obtained from the divisions of A C B, which was divided accurately into a certain number of equal parts, they also must be a like

planation, it will be of less utility. It is well worth studying and understanding, however, for the sake of what it shows concerning principles and the relationship of angles. We believe our correspondent's suggestion about the manner of constructing shop patterns of elbows, with reference to the matter of double cuts, will be found valuable by our readers.



SMYTH'S PATENT Duplex Grate.

After six years' trial the Duplex Grate has proved to be all that can be desired. It is durable, economical of fuel, and satisfactory in every way. The fact of its adoption into their best goods by such leading Stove manufacturers as

Ransom Stove Works, Albany, N. Y., Rathbone, Sard & Co., Albany, N. Y., Sherman S. Jewett & Co., Buffalo, N. Y., Bussey, McLeod & Co., Troy, N. Y., Co-operative Foundry Co., Rochester, N. Y., The Union Stove Works, Peekskill, N. Y., Black & Germer, Erie, Pa., Sheeler, Buckwalter & Co., Rogers Ford, Pa., Raymond & Campbell, Middletown, Pa., The Union Stove and Mfg. Co., Pittston, Pa., A. Bradley & Co., Pittsburgh, Pa., Isaac A. Shepard & Co., Philadelphia, Shantz & Keeley, Philadelphia, Barstow Stove Co., Providence, R. I., The Magee Furnace Co., Boston, Mass., The Stamford Foundry Co., Stamford, Conn., Schenectady Stove Co., Schenectady, N. Y., S. E. Olmstead & Co., Norwalk, Conn., J. Van Wormer & Co., Albany, N. Y., The Richmond Stove Co., Norw'ch, Conn., The Dighton Furnace Co., Taunton, Mass., The Walker & Pratt Mfg. Co., Boston, Mass., The Taunton Stove Co., Taunton, Mass., Wood, Bishop & Co., Bangor, Maine, Smith & Anthony Stove Co., Boston, Mass., The Highland Foundry Co., Boston, Mass., Burdett, Smith & Co., Troy, N. Y., B. C. Bibb & Son, Baltimore, Md., Cox, Whiteman & Cox, Philadelphia, Penn., Co-operative Foundry Co., Somerset, Mass., The Taunton Iron Works, Taunton, Mass., Portland Stove Foundry Co., Portland, Maine, Ely & Ramsay, New York, Peck, Howard & Co., New York, March, Brownback & Co., Limerick, Penn., Orr, Painter & Co., Reading, Penn., Bishop & Gavitt Stove Co., Attleboro, Mass., W. J. Keep, Troy, N. Y., Brand & Co., Milwaukee, Wis., Andrew B. Fales, Troy, N. Y., Potter & Co., Troy, N. Y., Corse & Co., Troy, N. Y., Swett, Quimby & Perry, Troy, N. Y., The Wolfe Stove Co., Troy, N. Y., Russell, Wheeler, Son & Co., Utica, N. Y., The Union Furnace Co., Taunton, Mass., and others,

insures its universal introduction, and is evidence of its great popularity where best known. We refer with pleasure to any of the above-named firms for facts in regard to the Duplex Grate.

We also invite your attention to

SMYTH'S New Furnace Grate

with which the ashes and clinkers can be removed instantly by one motion of a lever, with the furnace entirely closed, and with which a continuous fire can be kept for any length of time. For information, or for license to manufacture, address

U. S. Duplex Grate Co.
PITTSTON, PA.

GLOBE VENTILATORS & CHIMNEY CAPS.

Twenty Sizes. Made of Galvanized Iron.

SMOKY CHIMNEYS CURED!

Public and Private Buildings and Railroad Cars Perfectly Ventilated.

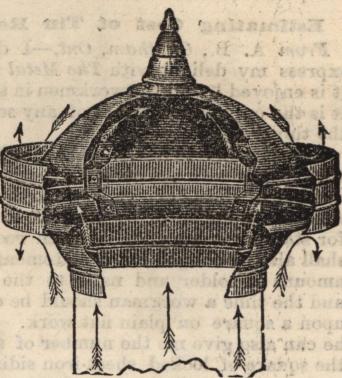
STATIONARY, ORNAMENTAL, NOISELESS, STORM PROOF, DURABLE, SIMPLE and CHEAP.

Send for Price List. Working Model sent on receipt of 20 cents, to pay postage. Manufactured and for sale by

GLOBE VENTILATOR CO.,

OFFICE, 203 River St., Troy, N. Y.

Wholesale Agents for New York City and vicinity, ABENDROTH & ROOT MFG. CO., 28 Cliff St., N. Y.
Wholesale Agents for Phila., Pa., and vicinity, MERCHANT & CO., 525 Arch St., Phila.
Wholesale Agent for Boston, Mass., and vicinity, CHAS. M. BROMWICH, 613 Broadway, S. Boston, Mass.
General Agents for Chicago and vicinity, HAY & FRENTISS, 37 S. Canal, Chicago, Ill.
Wholesale Agents for Louisville, Ky., SMITH, BAGBY & CO., 167 First Street, Louisville, Ky.



WESTON DYNAMO-ELECTRIC MACHINE

NICKEL.

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfits.

We are furnishing outifts specially adapted for Stove Work, giving a pure white deposit on plain or mat surfaces.

Outifts complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., \$250.

We beg to refer to the following Stove Manufacturers among 500 other houses using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Fuller, Warren & Co. Perry & Co., Detroit Stove Works, Michigan Stove Co., Co-operative Stove Co., E. & C. Gurney, Hamilton & Toronto and many others.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

CONDIT, HANSON & VAN WINKLE
Sole Agents NEWARK, N.J. U.S.A.

ENGLISH AGENCY, 18 Caroline St., Birmingham.

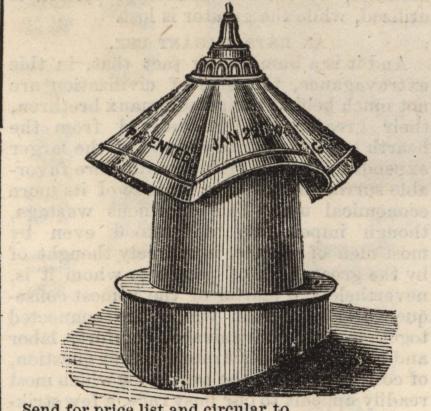


Keystone Portable Forge Co.,
218 Carter St., Philadelphia.
Send for circular.

A. KNISELY & CO., Manufacturers of CORRUGATED IRON,

Galvanized Iron Cornices, &c.,
AND THE
HAYES SKYLIGHTS (under license).
ROOFING, SLATE, FELT, &c.,
For sale and put on.
72 & 74 W. Monroe Street, CHICAGO.

GEM VENTILATOR.



Send for price list and circular to
GEM VENTILATOR CO.,
5 Mansion House Block, TROY, N.Y.

OLD METALS

PURCHASED BY

DAN'L W. RICHARDS & CO.,

Scrap Iron

AND

METAL DEALERS,

88 to 96 Mangin Street, N. Y.

SEND FOR QUOTATIONS.

POLISHING FELT.

We manufacture WOOL FELT of any quality, size, thickness or firmness in

SHEETS OR WHEELS,

FOR BUFFING AND POLISHING

NICKEL WORK ON STOVES, METALS, STONE, WOOD, &c. TINGUE, HOUSE & CO.,

56 Reade Street, NEW YORK CITY.

EXCELSIOR STOVE WORKS

MANUFACTURE

"Excelsior Cook," "Monumental Cook," "Enterprise Cook," "All Right Cook," all A. 1.

Also a variety of low-priced Cooking Stoves—MINERVA, COLUMBIA, SIGNET, ARION, WASHINGTON, and a large assortment of Portable Ranges, in size, style and price to meet the demands of all classes. Also a large assortment of HEATING STOVES, adapted to all kinds of fuel. EXCELSIOR RANGES (Brick Set), Twelve Sizes Plain, and Eight Sizes Hot-Air, arranged to heat a room above. This is doubtless the most popular (Brick Set) Range ever made. EXCELSIOR HOT-AIR FURNACES, both Portable and Brick Set, Seventeen Different Sizes. Will give more heat in proportion to cost than any Furnaces in the market. SOIL PIPE heavy and light. SINKS of all sizes, and a large variety of PLUMBERS' GOODS. Also complete assortment of Plain and Galvanized HOLLOW WARE, PLANTATION HOLLOW WARE, FARMERS' BOILERS, and MISCELLANEOUS GOODS. If you want the best Goods, at reasonable prices, send for Circular and Price List to

ISAAC A. SHEPPARD & CO.,

N. E. Corner Fourth St. and Montgomery Ave.

PHILADELPHIA, or S. W. corner Eastern Avenue and Chester Street, BALTIMORE.

We are prepared to furnish

Stove Manufacturers,
Oil Stove Manufacturers,
Jobbers & Retail Dealers,
WITH

MICA

of very best quality.

Estimates furnished on application.

J. S. & M. PECKHAM, Utica, N. Y.,

Miners and Wholesale Dealers in Mica.

MICA!

THE CHESTER MICA & PORCELAIN CO.

MICA

Of best quality,
Of all sizes,
Cut to any pattern,
In quantities to suit,
At lowest prices.

No. 87 LIBERTY STREET, NEW YORK.

Assorted Packages North Carolina

MICA.

PREPARED EXPRESSLY FOR THE RETAIL TRADE.

2 lb. Package, Containing 8 Sizes,	1/4 lb. 2 x5 3 x6	1/4 lb. 4 x5 2 1/2 x4	1/4 lb. 5 x7 3 x4	1/4 lb. 3 x5 2 1/2 x5	Price \$6.00
3 lb. Package, Containing 12 Sizes.....	1/4 lb. 3 x6 2 x5 4 x7	1/4 lb. 3 x5 3 x3 4 x5	1/4 lb. 2 1/2 x5 1/2 3 1/2 x4 1/2 3 x4	1/4 lb. 2 x4 2 x4 5 x8	Price \$8.50
4 lb. Package, Containing 16 Sizes.....	1/4 lb. 4 1/2 x5 1/2 3 x4 2 1/2 x5 1/2 3 x6	1/4 lb. 3 1/2 x5 1/2 2 x3 3 x5 3 x3	1/4 lb. 2 x4 5 x7 2 1/2 x4 3 1/2 x4	1/4 lb. 2 x5 2 x5 6 x7	Price \$11.00

Above Price Net Cash—No Discount. These Packages Delivered Free to any part of the United States.

MUNSELL & BROOKS, 115 Beekman st., New York

Estimating Cost of Tin Roofs.

From A. B., Chatham, Ont.—I desire to express my delight with *The Metal Worker*. It is enjoyed by all the workmen in the shop. It is the only paper that is of any service to the tinner.

I would like to ask K. O. A., of Newark, who speaks with the air of experience, the number of sheets of 14 x 20 tin to the square. Also the number of sheets of 20 x 28, both for standing-seam and flat-seam roofing. I shall also be obliged for a statement of the amount of solder and nails to the square, and the time a workman should be occupied upon a square on plain flat work. Perhaps he can also give me the number of sheets to the square of locked sheet-iron siding, such as is used on elevators and other wooden buildings, made of stove-pipe iron, 18 x 24 inches in size.

I may add that I always figure standing-seam roofing, 1 box of 112 sheets 14 x 20 as equal to 1 1/4 squares, or 1/2 box of 20 x 28, 56 sheets, equal to the same. I estimate the average labor on 1 1/4 squares on small roofs at \$3; on large roofs at \$2.50. The average solder I calculate at 3 pounds to the same space. These figures I have found, by calculating the cost of jobs when finished, to be about the average. I would like to have the experience of others upon the same points. On sheet-iron siding, such as I have described above, I figure 38 to 40 sheets to the square when laid. Cost of labor averages 60 cents; nails and cleats, 12 cents. In measuring, all openings under 50 square feet each are counted in. When over that size one-half the opening is allowed. This is to compensate for the extra labor caused by the opening.

Answer.—Our correspondent asks some very practical questions, and questions which it will be well for our readers to discuss. The cost of things is just what is required in active business. We have referred his letter to K. O. A., of Newark. His reply is as follows: “14 x 20 tin, edged in the usual manner for flat-seam roofing, exposes 13 x 19 inches, or 247 square inches to the sheet; 59 sheets, therefore, are required to cover a square. The same size tin for standing-seam roofing exposes 13 x 17 3/4 inches, or 230 3/4 square inches. It requires, therefore, 63 sheets to lay a square of standing-seam roofing. In 20 x 28 tin, worked in the usual manner, 19 x 27 inches, or 513 square inches, are exposed of each sheet upon the roof when laid flat seam. It takes, therefore, 29 sheets of it to lay one square. In standing-seam roofing the sheet exposes 27 x 17 3/4 inches, or 479 1/4 square inches, and therefore 31 sheets are required to lay a square of it.”

“Your correspondent’s estimate of what one box of 14 x 20 tin would do in laying standing-seam roofs is somewhat in error. Only 110 sheets are required to lay 1 1/4 squares, or 175 feet. To lay this same amount with 20 x 28 tin, only 54 sheets are required.

“I am in the habit of figuring about 1 1/2 pounds of solder to the square of 20 x 28 standing-seam roofing, the kind that I always lay in preference to the other; but workmen differ very greatly in the amount of solder they use. Some will smear almost twice as much upon the sheets as others will use in making good, tight seams. For 14 x 20 flat-seam roofing I calculate about 4 to 5 pounds of solder to the square. This item also is likely to vary according to the men employed.

“I have had no experience with the siding of which your correspondent speaks. If he had given you the size of the edges to be turned, it would be but a simple matter to figure it for him. I presume, however, he is not far from right in the estimate he makes.

“I join with your correspondent in hoping the trade will give the matter of labor on roofs some attention through the columns of *The Metal Worker*.

Durability of Galvanized Iron.

From N. S., Logansport, Ind.: Within a few months past several inquiries have been made through *The Metal Worker* respecting the durability of galvanized iron as an outdoor building material. In my opinion the article is of too recent origin to have the question intelligently answered. The first time I ever saw it was in 1845. A gentleman in this city building a substantial residence being East on business, found a box of metal plates which he was assured was equal, if not superior, to tin plate in resisting atmospheric influences. He purchased it and brought it here. The sheets were 14 x 20 inches. It was locked together in strips 14 inches wide, and the seams well soldered. Many tinnings may be interested in knowing that just about this time Mr. Ellsworth, Commissioner of Patents, had made the world acquainted with muriatic acid as a flux for soldering zinc or surfaces coated with it. I did the work and was greatly pleased at the ease with which the seams were soldered with this new material. The gutter never was painted on either side, but on account of the breaking of the seams from expansion and contraction, it was taken off the roof a few years ago, having been there at least 30 years. Within the past month I have reworked a few of those sheets, and I am astonished at the toughness of fiber the metal possesses after such long

exposure to influences that one would naturally suppose would utterly destroy it.

Note.—If our readers generally will give their experience with galvanized iron as fully as the above correspondent, it will not be long until its status in point of durability is thoroughly established. Records of trials of this kind are very valuable, and our readers, by sending notes of their own experience, will not only be contributing something to their own interests, but will also be recording facts in which engineers, architects and builders are interested. We desire to ask N. S., in this connection, whether he could see any difference between sheets of galvanized iron worked so many years ago and those manufactured nowadays? Also, if he knows whether the sheets spoken of were of American manufacture or English? If any other of our correspondents can tell anything from their experience upon this matter, we trust they will not be backward in sending their letters along for publication.

Electric Bells.

From A. B., Chatham, Ont.—Will some reader of *The Metal Worker* who has had experience with electric bells furnish for publication such a description as will enable one who does not know one battery from another to put up a set of bells in his own house? A description, written in a very plain manner, and telling everything one requires to know, even to the making of a battery, would be very instructive and useful to those who have not the time to study chemistry.

Tainted Well.

From S. B. R., —.—I have a well which I think was tainted from a privy vault. The vault has been cleaned out and we no longer use it, but the water for a time was a little tainted. Will it come pure and sweet after a time?

Answer.—The privy vault not only tainted the well but the ground between the well and the vault also. How long it will take for the ground itself to become pure we do not know. If the tainting matter is deep below the surface it may be years before the foul matter is destroyed. In some soils animal matter remains in a half decomposed state for an almost unlimited length of time. The bones of fossil animals are occasionally found in dirt, which is filled with a foul smelling remnant of their flesh. The reason for this is found in the fact that, except within a comparatively short distance from the surface, there is no circulation of air within the soil, and consequently the animal and vegetable matter in the earth remains, undergoing a partial decomposition, but not having sufficient oxygen to complete its destruction, while foul animal and vegetable matter at or near the surface of the ground undergoes rapid destruction by oxidation. That which is deeply buried is only partially destroyed. The amount of animal and vegetable matter which can be disposed of by mixing it with the soil near the surface of the earth is wonderful. A small patch of land with a few lines of tile pipes going through it within from 10 to 14 inches of the surface, will dispose of the solid and liquid sewage of a whole household, and will continue to do so through a series of years, simply on account of its ability to take up oxygen from the air. An equal amount of sewage deeply buried in the soil, say, at a depth of 10, 15 or 20 feet, would need many years to complete its destruction.

In many of the Old World cities the soil beneath the houses, and even the streets, is so filled with foul matter that it is impossible to have wells which are not contaminated. It is plain, therefore, if the cesspool has poisoned the ground and thus injured the well, that the water is not likely to be fit to drink until the tainted soil is all removed. Even should the well for a time show no traces of pollution, there is always danger that a heavy rain or a wet season, by raising the level of the water in the soil, will leach out some of the sewage and bring it into the water. It would be a wise plan to abandon the use of the water for any purposes of cooking or drinking. It will, of course, answer for washing, cleaning, and the like.

People do not generally understand what results are to be expected from water which is slightly fouled with sewage matter. Many persons persist in using such water because it does not make them positively ill of typhoid fever or some other disease which they recognize at once as coming from filth. When people are compelled to use water which is slightly tainted by leakage from cesspools, a very peculiar but easily recognized condition of health prevails. Children complain of various troubles which do not take very decided form, and for which the doctor does not appear able to prescribe successfully. At intervals they will get better, but something new will come up and give them a “pull back,” and though growing, they never seem strong and well. The grown-up members of the family “do not have good health,” yet do not seem to know why. First, perhaps, dyspepsia troubles them, then a light fever, and then a cough, all too slight to need much attention, yet all serious enough to keep them uncomfortable and often weak. Send any members of a family thus situated away where they can have pure air and water and their health immediately improves, the appetite, which

has often been fitful, is better, and there is frequently a great gain of flesh. This improvement takes place without the aid of medicine. On a return home there is usually a gradual return to the old condition. Such a state of health should at once call attention to the purity of the water, and if there is the least ground for suspicion, a new supply should be obtained at almost any cost.

How to Use the 12-lb. Bill of Tin Ware.

From W. & W., Townshend, Vt.—Is there any basis or rule by which one not acquainted with the bill can work out the price of the different articles of tinware?

Note.—The letter from which the above question is taken was written before the number of *The Metal Worker* which contained a copy of the 12-lb. bill had reached our correspondents. Our remarks in connection with the bill cover some of the points raised by our correspondents, but they leave this question unanswered. Hence we publish it. Will not some of our readers who have had experience undertake to enlighten our correspondents upon this point?

WANTS AND ADDRESSES.

From J. D., New York City.—Can you tell me where I can get repairs for the “Crown of the West,” and also who keeps repairs for goods made by the Westchester Stove Works.

Jas. D. McConnell, Ashland, Schuykill county, Pa., wishes to know where the Brilliant Lantern, or “Rogers Patent Triangular Slide Lantern” is made.

Stove Repairs.

From J. D., New York City.—Can you tell me where I can get repairs for the “Prize” cook, “Myrtle” cook and “Charm Cylinder” heating stove?

Answer.—Cook stoves by name of “Prize” are made by the Cleveland Co-operative Stove Company, Cleveland, Ohio; the Beaver Falls Co-operative Foundry Association, Beaver Falls, Pa., and by J. B. Hearon & Co., of Pittsburgh, Pa.

The “Myrtle” cook does not appear in any of our stove lists.

The “Charm Cylinder” is probably made by William Doyle, of Albany, N. Y. Burdett, Smith & Co., of Troy, and the Wolfe Stove Co., of Troy, make coal heating stoves to which the name “Charm” is given.

The Fuel of the Future.

The following is a communication from Mr. George S. Dwight to the *Engineering and Mining Journal*, on the subject of the waste in coal burning, and the advantages of using fuel in the shape of gas. The figures have special reference to the city of London. They will be found of great interest, however:

Fuel is a prime necessary to all classes of humanity, whether savage or refined, and in its aggregate annual consumption represents a greater quantity in weight than any other single article of man’s use. When it is remembered that this use, from the nature of the case, is an absolute destruction of material, involving a constant reduction of supplies having known limits, it becomes a most startling fact that in no other department is the waste so appalling and the useful result derived so small. In other words, of the heating power really contained in the material, by far the smaller proportion is utilized, while the greater is lost.

AN EXTRAVAGANT USE.

And it is a humiliating fact that, in this extravagance, the men of civilization are not much behind their Esquimaux brethren, their greater comfort derived from the hearth being rather the result of the larger expenditure of better fuel, with more favorable surroundings, than because of its more economical use. This enormous wastage, though imperfectly understood even by most men of science, is scarcely thought of by the great mass of people to whom it is, nevertheless, a matter of the utmost consequence—a matter in which are connected together cost, convenience, comfort, labor and health.

To illustrate the first question, of cost, that being the argument which most readily appeals to our busy race, a few striking facts may be stated regarding the fuel use of the city of London; for it is quite fair to judge of the art of combustion by its practice in one of the most refined centers of civilization.

There are 8,000,000 tons of coal, independent of other fuel materials, annually consumed in that great metropolis. The mining of this immense mass of mineral involves a loss in dust or slack of one-fourth as much more, say 2,000,000 tons, which, not having heretofore been considered commercially valuable, is accumulated in mountainous heaps at the mines. The handling of this latter, however, constitutes an item of cost which must be added to the price of that sent to market; for, in this century, the hand of labor, like that of Midas, changes values by its mere touch.

The transport to market of such a vast weight occasions an aggregate of toil, wear, tear and loss, which further swells the cost

before delivery to the consumer; but, for present purposes, it will suffice to consider the waste from the time it is in his possession. We shall find that this first cost, excessive though it be, is yet to be wonderfully augmented by secondary expenses; for after it has been deposited in the cellar, it must all be rehandled, remined, as it were, and carried up stairs and to the grate.

This outlay is not one of money simply, but of labor, and as, strictly considered, physical exertion is equivalent to an expenditure of heat, we may well speculate upon the units employed in moving 50,000,000 pounds of coal, and 10,000,000 pounds of ashes, each day in the year, exclusive of collateral exertions incident to the maintenance of fires, and of the energy of those moral heat-units wasted over refractory and exasperating grates and stoves. And yet this is but the beginning of loss; for by the most liberal allowance, after all these expenditures are made, only about 10 per cent. of the heating power of the material is obtained.

To realize the thermal value of 800,000 tons, 8,000,000 are burned!

Not to enter upon a tedious analysis of the causes of this tremendous loss, it may be simply explained by the statement that it results from the imperfect combustion inevitable to the burning of a mineral form of carbon in atmospheric air.

HOW HEAT IS WASTED.

A large amount of heat is expended in converting the coal to gases; for it is only these latter, and not the coal itself, as such, that burns; and in this process of conversion and the subsequent combustion, the composition of the air is very unfavorable to a good result. Exactly the chemical mixture for sustaining life, it is but poorly adapted to combustion, because its oxygen, the only combustible element in it, constitutes but one-fifth of its volume, while the nitrogen representing four-fifths, is not only useless in combustion, but retards it and absorbs a large proportion of the heat of the fire. If precisely the right theoretical minimum of air, 11.61 pounds, is used in the burning of one pound of good clean coal, the temperature of the fire is 488° F. If 24 pounds of air are admitted to the furnace, the temperature will be reduced to about 245°. And yet, despite this serious depreciative effect of an excess of air, Dr. C. W. Siemens states that even in metallurgical operations, under skillful superintendence, the quantity of air used is 300 cubic feet, equal to 24 pounds to each one pound of coal; and to illustrate the vastness of such a volume in many cases, instances his own establishment at Gateshead, where, he says, are “seven furnaces, each of which uses about one ton of fuel per day, in all seven tons; therefore 7 × 24 = 168 tons of air required. Again, a pound of coal requires about 300 cubic feet of air. If we imagine the 168 tons of air made into a long stream of one square foot in area, the total length will be 21,381 miles.” Of this vast stream, 16,891 miles are useless nitrogen passing into the furnace cold and out of it hot!

If the excessive use of air is unavoidable, even in the most perfect furnaces, under scientific supervision, and occasions so extensive a loss, it may be inferred how great a waste of heat from this single cause must occur in domestic grates and chimneys imperfectly constructed and under the ignorant management of servants. On the other hand, if too little air is used a partial conversion ensues, and a large proportion of the most valuable combustible gases drift out of the fire-place unconsumed. Thus, between the two difficulties, it happens that from the chimneys of our homes far more heat is going to waste than is utilized within the dwellings.

FOUR HUNDRED THOUSAND TONS OF SOOT.

If we consider that, by moderate estimate, 400,000 tons of smoke, soot and dust, and 120,000 tons of sulphur, annually thus pass into the atmosphere of London, we cannot be surprised that its skies are darkened and its air heavy. It is probable that an analysis upon one of its days of black fog would show the air to represent, in fair proportion, the elements requisite to the production of the best combustible gases, namely, carbon, oxygen and hydrogen. But for the limitless energies of Providence and the corrective operations of nature, man would soon poison the atmosphere on which he is dependent.

It must be admitted, on the above facts, that the art of combustion, instead of having attained the refined development of any other art, is the most conspicuous reproach upon the civilization of the age. The management of crude fuels is no more successful than the attempt would be to individually manufacture in our homes, our garments and food from the raw materials of nature. Strictly, it involves more serious difficulties than those processes, and the day is at hand when it will be wondered that a refined and progressive society could have so long tolerated such a rude method.

(To be continued.)

When a Wisconsin census taker wants to get a count of the inhabitants of a town he doesn’t go chasing around after folks, he just starts a dog fight in the square, and then climbs a telegraph pole and counts the heads.

MERCHANT & CO.,
IMPORTERS AND DEALERS IN
TIN AND ROOFING PLATES, METALS,
BLACK, GALVANIZED AND RUSSIA SHEET IRON.

All Sizes of Charcoal and Coke Plates for Stamping, Roofing and Special Work.
BLACK, GALVANIZED AND RUSSIA SHEET IRON.

SHEET COPPER,

Planished and Braziers'

Sheathing,
Fire Box,

Bolt and Rod.
Circles,

Cold Rolled,
Polished,

Nickel Plated,
Reservoir Metal.

Copper
Knobs, all kinds

Lead, Pipe
Sheet
Pig
Bar

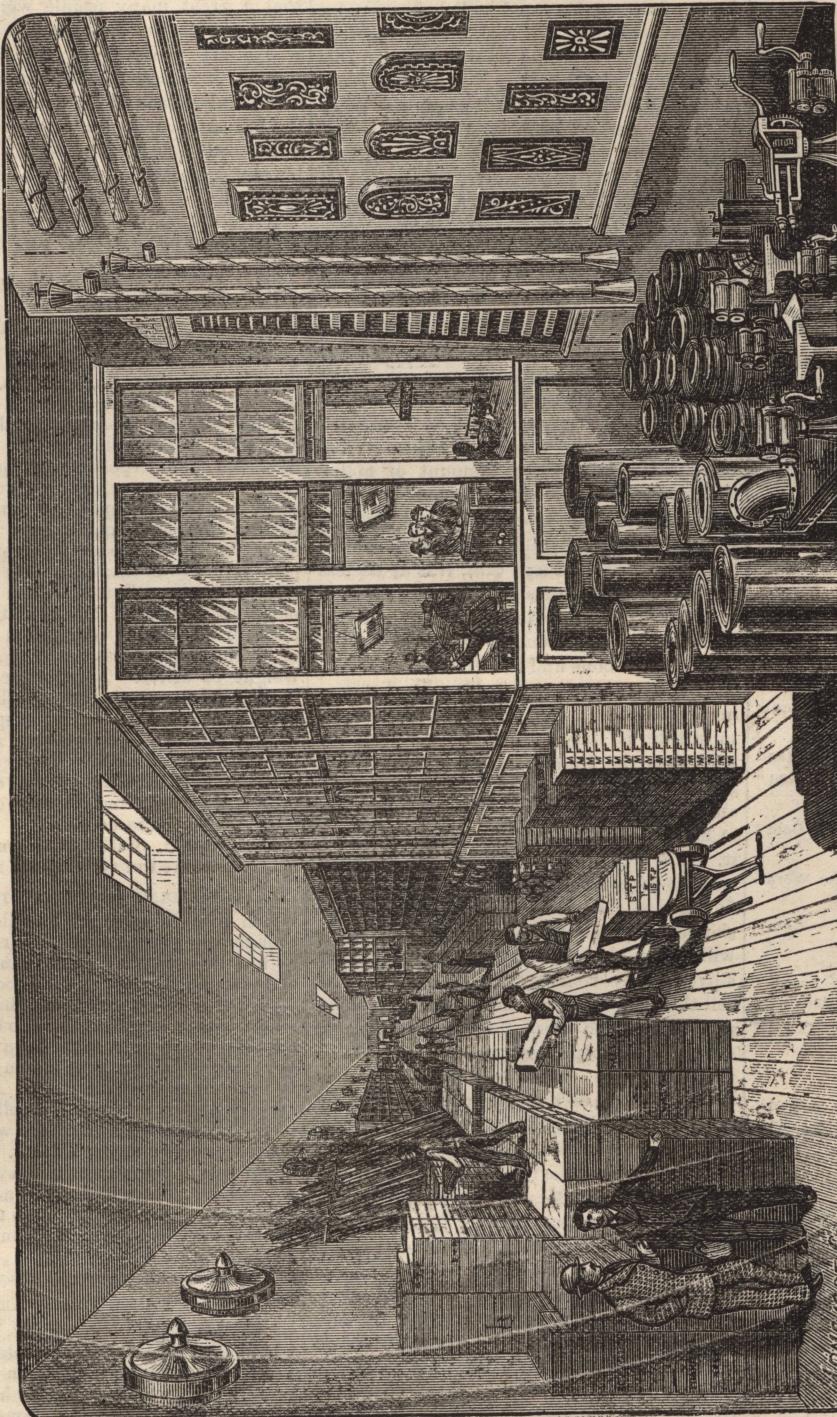
Machines, all kinds
Mica, all sizes
Milk Pan Supplies

Nails, Tinned
Galvanized
Copper
Brass

Paint.
Pipe, Brass
" Copper
" Zinc
" Lead
" Galvanized Iron
" Black
" Corrugated
" Spiral
Plumbago
Pumps, Galvanized
Registers, &c.
Rivets, Iron
" Copper
" Brass
Rods, Iron
" Brass
" Copper
Yellow Metal
Rosin
Spelter
Stereotypers' Metal
Sheathing
Slate Register
Frames
Solder, " M. F."
" ½ & ½
" No. 1
" Plumbers'
Sheet Iron
Galvanized Iron
Refined
Best Bloom
B'k Refined
M. R. for Cans
Harvey's Cleaned
Russia Iron
Prime and No. 1
Stained
Am. Pat. Planished
" A, & " B,"

Brass and Copper
TUBING
FOR
Boilers,
Heater Tubes,
Pump Chambers,
Worms for Stills,
Steam Pipes,
Condensers,
Bilge Pipes,
Feed Pipes.

VENTILATORS, Globe
Waste, Cotton
" Wool
Wire, all kinds
Whistles
Speaking Tubes
Zinc, Slab
" Sheet
" Pipe
Can Screws
Battery Plates



Interior View of Store, 525 Arch Street.

PHILADELPHIA.
Cement, Solder, &c.

PIG TIN, ANTIMONY, LEAD, SPELTER, SHEET ZINC, SHEET BRASS, WIRE RIVETS, &c.

TINNERS' TOOLS AND MACHINES.

All Goods Guaranteed to be as Represented.

THE METAL WORKER

AND
Stove & Tin-Trade Journal

WITH WHICH IS
INCORPORATED
THE SHEET-METAL BUILDER

New York, Saturday, February 14, 1880.

DAVID WILLIAMS - Publisher and Proprietor
 JAMES C. BAYLES - Editor.
 JOHN S. KING - Business Manager.

The Metal Worker is published every Saturday Morning at No. 83 Reade Street, New York.

RATES OF SUBSCRIPTION, INCLUDING POSTAGE.

United States, British America and Sandwich Islands. \$1.20

All Other Countries, \$2-8/-10 francs-8 marks-
 ½ roubles (coin)-10 lire-10 pesos.

REMITTANCES

should be made by draft, payable to the order of David Williams, at any banking house in the United States or Europe; or when draft cannot be obtained in postage stamps of any country.

NEWSDEALERS OR BOOKSELLERS
 In any part of the world may obtain *The Metal Worker* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England; or the San Francisco News Co., San Francisco, California, U. S. A.

DAVID WILLIAMS, Publisher,
 83 Reade Street, New York.

PITTSBURGH..... 77 Fourth Avenue
 Jos. D. WEEKS, Manager and Associate Editor.

PHILADELPHIA..... 220 South Fourth Street
 THOS. HOBSON, Manager.

CINCINNATI..... Builders' Exchange
 T. T. MOORE, Manager.

CHATTANOOGA..... Eighth and Market Streets
 S. B. LOWE, Manager.

BRITISH AGENCY.
 The publishers of *The Ironmonger*, 44a Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

CONTENTS.

Page 1.—Cornice Making.
 Page 2.—Cornice Making—(Concluded). The National Association of Stove Manufacturers.

Page 4.—The National Association of Stove Manufacturers—(Concluded). Curries' Patent Roofing.

Page 6.—The Letter Box.

Page 8.—The Letter Box—(Concluded). Wants and Addresses. The Fuel of the Future.

Page 10.—The Stove Association. Scientific and Technical. The Ballad of the "Crown of Gold" Cook.

Page 11.—The Ballad of the "Crown of Gold" Cook—(Concluded).

Page 12.—Trade Report. Peoria Water Works. Projected Buildings. Mechanics' Liens.

Page 14.—Plumbing.

Page 16.—Stove Trade Notes.

Page 18.—Prices Current.

Page 20.—Stove Trade Notes—(Concluded).

The Stove Association.

Elsewhere in this issue we give a very full report of the proceedings of the National Association of Stove Manufacturers at the second session of its annual meeting, Thursday, February 5. Concerning its action with regard to prices, there is little to say in addition to what was said last week in our general comments on the new 6½ cent basis.

Those who read the discussion over the recommendation of the committee with regard to prices, of which we considerably give our readers only an outline, will see that much valuable time, with a great deal of more or less valuable breath, was wasted in haggling over a form of words which some understood and some did not, but which meant in effect just what everybody present wanted to approve by an aye vote. In recommending a basis price for common stoves, the committee seem to have made a mistake in putting it in the way they did. As will be seen, they recommended that the basis price for the commonest grade of stoves should be 6½ cents for the castings, and that all the materials used in mounting should be charged extra, plus a reasonable profit thereon. Now, a stove is not a stove until its plates are put together, and in a resolution intended to govern the action of manufacturers in their relations with dealers, it seems to us a mistake to recommend a method of adjusting the price which is simply a detail of foundry bookkeeping. If a manufacturer wants to know what a stove costs him, he must, of course, begin by weighing the castings which go into it; but this is a matter with which the dealer has nothing to do. Except in the matter of odd plates for re-

pairs, the dealer does not buy unmounted castings, and we should have considered it unwise to have made the minimum price of common stoves rest on a basis of 6½ cents for the castings on the shelves of the manufacturer's storehouse. Again, there seems to be no reason why any distinction should be made between the plates and such bolts and rods as are needed to keep the plates together as a stove. If they can afford to sell the castings at 6½ cents a pound, they can afford to throw in, at the same price, whatever is essential to a plain mounting. With this as a basis, they could have added with propriety the cost of all trimmings which might afterward be put on, and which are not found in the commonest grades of stoves to which the basis price of 6½ cents applies. This would have been understood and promptly acceded to by all the members of the association. As it was, the committee's recommendation was discussed, interpreted, misinterpreted, explained and misunderstood; substitutes were offered and amendments amended, until at last, when a vote was taken, it had to be taken a second time, as many of those who voted had done so under a misconception of the real question before the meeting. It would be well to bear this fact in mind another year. Whatever basis price is agreed upon should mean the price at which the commonest grade of stoves shall be sold, with such necessary mountings as are needed to make stoves of them. If 6½ cents is not enough, let it be made seven cents or eight cents; but the price should not, we think, be fixed upon anything but plain mounted stoves, with extra charges for extra trimmings.

It will be noted that the question of the cost of nickel ornamentation is made a great deal of in the discussion. In our opinion its importance is exaggerated. A great deal of the nickel plating on stoves is now done very cheaply, and the increased cost of a stove with the average amount of nickel ornamentation over one without, is much less than would be supposed from the amount of talk to which this nickel business has given rise. At any rate, it is as useless for the manufacturers to complain about it as it would be for milliners to complain that women who buy bonnets want them trimmed with ribbons and flowers and feathers. No manufacturer has any idea of abandoning nickel until a cheaper and equally showy substitute is found. He knows perfectly well that the trade demand stoves with a great deal of meretricious ornamentation, and that he must meet this demand or suffer in his competition with others who will meet it. He is perfectly justified in charging what it costs him, with "a reasonable profit" added, but there is no reason why he should lay great stress on this item. If he will make the price he charges for plain stoves fairly remunerative and refuse to sell them for less, he will have no trouble in getting as much more for his nickel-plated stoves as will represent the extra cost and a profit thereon. We make this statement advisedly, and do not believe it can be intelligently challenged.

An interesting episode of the second day's proceedings was the reading by the secretary of a letter from Messrs. E. Sperry & Co., dealers, of Sherman, N. Y. The reading of this letter was, of course, a courtesy which the writers had no right to demand and really but little reason to expect. However, it was read, and we are by no means sure that more of the same kind could not be sent to the association with advantage to the trade at large. Whatever excuse there may be for the ornamentation of parlor heaters with nickel trimmings and polished or plated edges, there is none for adorning cook stoves. The cook stove should be regarded as an object of utility simply. It cannot, we think, be made an object of beauty, and if this were possible, it would be out of place among the surroundings of a kitchen. It should have the best form consistent with utility; it should be able to bear transportation, neglect and even rough handling, and nothing should be added to it which is not in some degree contributive to its utility. The trouble is, however, that a majority of dealers do not take the same sensible view of it as Messrs. Sperry & Co. They buy most readily the goods which make the most show on their salesroom floor. Utility is a secondary consideration, and if the stove will do the work expected of it when set up they are satisfied. If the dealers will take plain, well-made goods, the manufacturers will gladly furnish them, but under existing conditions in the trade "frills" lead, and without them the best constructions in the market would have small chance of finding a sale which would return the manufacturer

the cost of the patterns. A few manufacturers resisted the demands of the trade as long as possible and determined to adhere to standard lines of plain goods; but one by one they have yielded to the pressure and wheeled into line, and some of them are now leading in the matters of "novelties" and "frills." It is easy to say they are foolish, but they make goods to sell, and are most likely to make those which sell the best.

The ballad elsewhere given was contributed by the author to the entertainment which came with the cigars and coffee at the dinner of the Stove Manufacturers at Delmonico's. Its very favorable reception encourages the belief that it may not be without interest for the dealer, who will perhaps discover in the circular of the manufacturer of the "Crown of Gold" cook stove a familiar sound, which will remind him of some of those he has received during the past season. Those who recall the ballad of "The Royal Highness" base burner, published some time ago, will remember that a great many people were curious to know how the foreman managed to succeed where his predecessor, the founder, had failed. It was not until he read the circulars which appeared in our columns during the fall and early winter months, that the writer was able to answer this question to his own satisfaction. The "boom" accounts for it all.

SCIENTIFIC AND TECHNICAL.

Herr J. J. Hesz, of Vienna, claims to have developed a good method for

COATING METAL GOODS WITH BRASS

by electricity. He states that the greatest trouble experienced hitherto in accomplishing this has been to obtain a bath which has the power of dissolving both copper and zinc well, so that alloys of the two may be dissolved and deposited uniformly. With former solutions too strong a current would yield a grayish deposit of zinc, and too weak a current would give a pale reddish color, while in the most favorable case a poor yellow was obtained. He prepares his solution in the following way: Dissolve 84 parts, by weight, of bicarbonate of soda, 54 parts of chloride of ammonium and 13 parts of cyanide of potassium in 2000 parts, by weight, of water. Then cover the sides of the vessel containing the bath with sheet brass, cast, not rolled, and suspend a sheet in the bath, the former acting as anode and the latter as cathode. After allowing the current to pass through for an hour, the bath will be prepared for any objects to be coated with the same alloy.

Herr Krupp, of Essen, Germany, has recently patented in Germany a method of

WELDING TUBES AND TIRES,

which is based upon an excellent idea, although the practical details recommended by him do not strike us as being very well elaborated. He draws the tube over one of a pair of ordinary rolls, and then heats the whole length of the portions to be welded by a special contrivance, which is a portable firebox, into which air is so blown that the heat is directed against the weld. After the necessary heat is attained the rolls are set in motion and the place to be welded is repeatedly drawn through them. His heating apparatus appears to us clumsy, and could, we believe, be replaced to advantage by some gas apparatus similar to that used for heating wagon tires in this country and in France.

The *Moniteur Industriel* describes

A CHEAP FIRE ALARM

which has been invented by M. Brasseur, who claims for it the advantage of being capable of working both when a fire spreads rapidly and when it makes headway very slowly. The apparatus consists of two tubes made of sheet zinc, both covered on the outside with lampblack. They are attached, in a vertical position, to a cast-iron bed-plate, their upper ends being separated by a copper plate which, as a rule, is kept at a certain distance from a contact screw. This screw is connected with one pole of an electric battery, while the copper rod is connected with the other, an alarm bell being in the circuit. One of the two tubes is empty, while the other is filled with tallow and is closed with sealing wax. As soon as a sudden increase of temperature takes place the empty tube will be heated more rapidly than the other, and in expanding will bend and bring the copper rod into contact with the screw, causing the bell to ring. But if the fire spreads slowly, the heat will expand both tubes simultaneously, until the temperature of melting tallow is reached. The tallow in the tube will become liquid, and therefore keep the latter from expanding as quickly as the empty tube, which in this case also begins to bend, and thus also rings the alarm.

A gentleman formerly connected with the Philadelphia *Ledger* is reported to have discovered

A SIMPLE FORM OF AUDIPHONE,
 which he has tried with satisfactory results.

although he is very hard of hearing. A few days ago he was explaining the principle of the audiphone to some friends, and to illustrate his remarks, put a folded newspaper between his teeth, bending it over in the form of the audiphone. To his surprise he found that he could hear as well with the newspaper as with the audiphone. He subsequently attended an auction sale, and putting the catalogue between his teeth and bending it down with one hand, heard all that was said, although without some such contrivance he could hear nothing. The experiment is a very simple one, well worth trying by all who are hard of hearing. Newspapers, pamphlets, card boards, even sheets of writing paper seem to serve the purpose as well as the hard rubber audiphone.

The Ballad of the "Crown of Gold" Cook.

Which Relateth How it Came to Pass that the Founder Could not Fill his Orders.

BY JAMES C. BAYLES.

I have often been asked, since I wrote of a

stove—

The "Royal Highness" by name—

How it fared with the foreman who bought the works,

And what of our friend became;

And how it was that his breakfast dish,

Instead of hash, was pie—

At a time when others were glad to get

The first-named victuals,—and why

He got along so-uncommon well,

And to answer the same I'll try.

Our hero erst was the foreman true,

But a founder now is he,

And he sits in the chair that belonged to his boss

Ere the panic of '73.

He bought the works at the sheriff's sale

For two and a half per cent.

Of what they were held to be fairly worth,

And had given it out that he meant

To make them pay if he had to spend

His fundamental cent.

Now, those of the boys who remembered as how

They had heard the old boss say

That he'd sell his stoves at a profit if

He had to give 'em away,

Exchanged sly winks and knowing smiles,

And their heads they sagely shook,

As much as to say, "You'll a balance find

On the wrong-hand side of the book

When at the annual balance sheet

It devolves upon you to look."



"—thought the matter o'er."

Yet never a bit did the new boss care
 What the views of the boys might be;
 And when doubts were expressed of his
 making it go,

He smiled and remarked: "We'll see."
 But into his office each day he went
 And carefully locked the door;
 Then seating himself in the oaken chair
 Of which we have heard before,
 He lighted his pipe with a brimstone match
 And thought the matter o'er.

Now, when times are hard, it must be con-

fessed,

There are easier things to do
 Than to hit on a plan for getting rich
 And successfully carry it through.

It is easy enough to buy and sell,
But it's not so extremely plain
How, with buying and selling, when trade
is dull,
There is any chance for gain;
And without a profit to make it wax,
One's capital's sure to wane.

Quoth he to himself, "It's an easy job
For to make a business pay
When you've got your foundry and cash in
bank
For to draw on; but I should say
It takes a fellow that's got some points
For to start without a cent,
And pay out something more than he makes
For interest and rent,
And yet get rich." Which are words, I
trow,
To which all will yield assent.

But the new boss wasn't a man to scare.
He had seen the mill go round,
And observed that many who came for grist
Had got it by being ground.
He had seen ten fail in the race for wealth
For one who had made his pile;
Had seen good men step down and out
After making it go awhile;
And, having naught else to depend upon,
He resolved to rely on guile.

Now, the plan that he finally hit upon
Was guileful, you may depend;
But it served his turn, as I hope to show
Ere my story has reached an end.
To the racks of the store-house near at hand
With a couple of men went he,
And chose him a line of patterns out
That were made in '53.
"Take these," he said, "to my pattern shop
With all celerite."



"—resolved to rely on guile."

Then his pattern makers he bid give heed
To the words he had to say:
"Erase the names you find hereon
And cut the dates away;
Then carve and cover them deftly o'er
With ornament—all they'll hold—
I'm not particular what it is,
So long as it's big and bold;
Then pile on the nickel—regardless like—
And call 'em 'The Crown of Gold.'"

"I want a name plate across the front
That shall beat the biggest out.
The oven door must a panel have
That will leave the folks in doubt
If it's meant to hang in the drwing room,
Or in the kitchen be.
I've taken a nickel license out
At a busting royalty,
And I mean to get the money back
With a dollar or two for me."

The pattern makers they stood aghast
And considered the boss insane;
But he merely remarked, "Now, hump it
through!"
And they fell to work amain.
They carved and covered the patterns o'er
With ornament—mostly bad—
That would set a critic's teeth on edge
And drive Benn Pitman mad;
But the stoves, when finished,—they fairly
howled,
And the heart of the boss was glad.

Quoth he, as he eyed them o'er and o'er,
"Well, this certainly beats the deuce;
And yet, I remember, the old boss said
Them patterns there wer'n't no use.
Why, by all that's cheeky! this 'Crown of
Gold'."

Has got more points that's new
Than any stove in the trade to-day,
And I'll tell you what I'll do—
I'll bet that for every one I make
The dealers will order two."



"—they fairly howled."

Then into the foundry he straightway sent
Those patterns of '53,
And bid them make all they possibly could—
"I'll need a pile," quoth he.
Next sat he down with his pen in hand,
A circular to write.
It took him all that lightsome day
And half of the darksome night;
But he heeded not how the hours passed,
For he wanted it worded right.



"—a circular to write."

First, he roughed it out in a general way,
Then copied it fair and clear,
But found that its "truthful inwardness"
Too plainly did appear.
So he wrote it again, and many times,
And much he scratched his head,
For he meant that this circular of his
By the dealer should be read,
Nor into the basket unheeded go;
And this is what he said:

To my Customers and the Trade at Large:
My sales of 'The Crown of Gold,'
Since the first of August, have been so great
That my whole year's product is sold!
This announcement I publish with great regret,
But I think it is only right
To lay the matter before the trade,
For fear that some dealers might
Depend upon getting them later on,
And be caught where the breeks are tight.

"To such, alas! I can only say
They had better go elsewhere,
And buy some inferior stoves with which
To muddle along through the year.
No doubt there are many who pine to get
The orders I cannot take,
And who have full plenty of so-called cooks
That will boil a kettle and bake;
Take these, good dealer, and 'twill be put
To your credit for charity's sake.

I am now employing two thousand men
On 'The Crown of Gold,' and my line
Of the same includeth the sizes three,
Numbers 7 and 8 and 9.
The castings are pulled from the sand with tongs
As soon as they're fairly set,
Then mounted and shipped without time to cool,—
Which is rather fast working—and yet
I cannot accept more than one per cent.
Of the orders I daily get.

Next year I shall greatly enlarge my works
And employ ten thousand men,
And then, perchance, I may overtake
My orders—but not till then.
Meanwhile, as to prices, I beg to say
All quotations of mine are withdrawn,
And, in view of the wages that now are paid
And the way pig iron has gone,
I shall charge whatever my goods are worth
When the bills of lading are drawn."



"the dealer's hair rose up."

To say that the dealers' hair rose up
When this circular they read
Were to put it mildly—too mild, indeed—
And with one accord they said:
"Well, may I be blanketed if ever I heard
Before of this 'Crown of Gold,'
But it must be something uncommon good
If the whole year's product is sold
And they're keeping at work all the men
and boys
Their foundry and shops will hold.

"And who knows but some snoozer in this
here town
On me has gotten the bulge,
And when trade in the fall begins for fair
The secret he will divulge!
And how will I look when the 'Crown of
Gold'
On my floor does not appear,
And customers turn from my shop away,
Having seen the stove elsewhere?
The very thought is enough, forsooth,
To make even a stove man swear."

And so to the guileful foundry boss
Each dealer straightway wrote:
"I must a hundred and fifty have
And will give you my four-months' note."
I trow that the founder sweetly smiled
As he read these letters o'er:



"the founder sweetly smiled."

"They're caught too easy by half," he said,
"It were better to play them more
Ere, like the skillful fisherman,
I bring my catch to shore."

* If the relation which the moral bears to the story is not obvious, so much the worse for the moral.

So he let them wait in suspense a while,
And finally wrote to say
He thought it evinced an uncommon cheek
To tender him notes in pay.
He had no "Crowns of Gold" to spare—
But if he had, perchance,
His terms were invariably cash
And always in advance;
And the tendency of prices was
To rapidly enhance.

The honest dealer, he read these words
With a heart that was heavy and sad,
And like Captain Corcoran, in "Pinafore,"
Cried: "Damme, it's too bad."



"it's too bad."

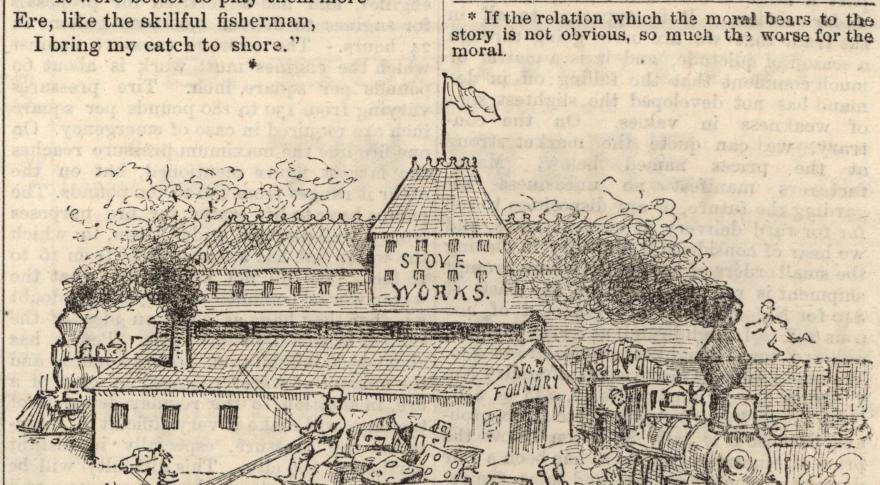
But the more he thought of the "Crown of
Gold,"
The more he saw that he
Must have them, and so for seventy-five
He begged on bended knee,
And if he could get them p. d. q.
He would take them c. o. d.



"got his pie."

Well, to shorten a story already long,
This famous "Crown of Gold"
From the patterns of 1853,
Was by tens of thousands sold.
And this is how it came about
That the founder got his pie,
And had no use for the vulgar hash
Which the poor man eateth; and why
(Moral.)

It is always better to tell the truth,
In a business way, than to lie.*



"Was by tens of thousands sold."



Office of THE METAL WORKER,
SATURDAY MORNING, February 14, 1880.

Antimony.—The demand is as active as before, at 21¢ @ 23¢ as a range, according to brand and quantity. The supply is short, and all obtainable for 1880 has been contracted for.

Coal.—During the past week the trade has been somewhat improved by reason of the cold weather; it has been chiefly perceptible in domestic Coals, and in those marketed by individual operators. There has been, in fact, a considerably more hopeful feeling in the trade. The great companies show no disposition to cut prices, and are holding firmly to their circular rates. Most of them are busy with their line trade, and, although they are working full time, are arranging things at the collieries so as to make as large an amount of furnace Coal as possible. In a few instances we hear of operators sending "the run of the mine" to furnaces, which course relieves them of the necessity of getting rid of any of the domestic Coals. We hear that the stocks are rapidly increasing, and in some cases the companies are beginning to load into boats.

The furnace trade along the lines is very good and the demand from manufacturers brisk. Most dealers seem to be encouraged by the fact that up to the present time the companies have not shown any disposition to cut prices, but prefer staying out of the market and stocking Coal to shading their rates. Quotations for the time are somewhat higher than last week. The prices vary from \$3 up to \$3.25, according to the grade and size. The circulars quote Lump at prices varying from \$3.15 to \$4.25, Stove at from \$3.75 to \$4.50, and other sizes in proportion.

The total output for the year is large, exceeding that of 1879 by 200,000 tons. At the close of January nearly 1,700,000 tons were reported. The figures for the line trade are not at hand, but from all sides come the reports that it is very heavy.

Copper.—Although not much has transpired, sales of Lake Superior being restricted to 300,000 pounds at 24½¢ @ 24¼¢, there is, nevertheless, a rather firmer feeling. We quote the market at the close as above, Baltimore bringing about as much. There has been no change in the manufactures of Copper here since our last report. We quote: Braziers' Copper, 34¢; Bolts, 34¢; Circles, 37¢, and Sheathing Copper, 32¢.

Hardware.—Business continues active and prices firm, with, as will be seen from the following, further advances in values. The demand for foreign Hardware is assuming considerable proportions, and we hear of some very large orders for importation being placed during the week.

The manufacturers of Rules have advanced their prices to discount 55 and 10 per cent. for Boxwood and 45 and 10 per cent. for Ivory.

The manufacturers of Wood Screws have advanced the price of Flat Head Iron Screws to discount 35 per cent., the new price took effect on the 12th inst.

E. Ketcham & Co., 100 Beekman street, have issued the following price list for Ketcham's Patent Seamless Metallic Sieves, which are subject to discount 33½ per cent.:

KETCHAM'S PATENT SEAMLESS METALLIC SIEVES.
Size for Flour or Meal—12¾ in. diam.
Mesh..... 14 16 18 20 24 30
Iron Cloth..... \$4.00 4.00 4.25 4.50 5.00 6.50 doz
Plated Cloth..... 4.75 5.00 5.25 5.50 6.00 8.50 doz
Size for Jelly.

8-in. (30 Mesh), \$4.00; 10-in. (24 Mesh), \$4.50; doz.

Iron.—The demand for Raw Irons has perceptibly fallen off, and we cannot report a large transaction during the week under review. It is apparent to all in the trade that we are now going through a season of quietude, and it is a matter of much comment that the falling off in demand has not developed the slightest sign of weakness in values. On the contrary, we can quote the market strong at the prices named below. Manufacturers manifest no uneasiness regarding the future, or any disposition to sell for forward delivery at current rates, and we hear of considerable difficulty in placing the small orders of consumers where prompt shipment is required, even on the basis of \$40 for No. 1. Sales are reported of 400 tons 2 X (a Lehigh brand) at \$39 at furnace, and 150 tons Poughkeepsie No. 1 at \$40. We quote same as last week: Foundry No. 1, \$40 @ \$41; Foundry No. 2, \$38 @ \$39; Gray Forge, \$37 @ \$38. For Scotch Iron, probably because it is fully \$5 a ton below the price of American Pig, there has been a fair demand during the week, and sales are reported of 1000 tons Gartsherrie, April delivery, on private terms, and 2000 tons of the same brand, also 1500 tons Middlesboro Iron on private terms, 100 tons Summerlee at \$34.50, 600 tons Eglinton in lots at \$32 @ \$33.50, and 100 tons Gartsherrie at \$33.50. The market on the other side has advanced about 4¢ a ton for Scotch Iron during the

week, as will be seen by reference to our cablegram. We quote: Eglinton, \$32 @ \$33; Coltness, \$35; Glengarnock, \$34, and Gartsherrie, \$33 @ \$33.50.

Lead.—The market wears a quiet, but yet firm, aspect; sales have been light, but the price remains 6¢ @ 6½¢ for Common Domestic. Consumers are holding off, contenting themselves with using up what supply they have left. Meanwhile Lead remains in strong hands, and no immediate break seems to be apprehended. Nothing has transpired in Refined, which is firmly upheld at 6.35¢. Manufacturers' prices are unchanged. We quote: Bar, 7½¢; Pipe, 7¾¢; Sheet, 8½¢; Tin-lined Pipe 15¢, all less 10% to the trade.

Nails.—The demand for Nails has been light during the week, and prices have remained as previously quoted. The tone of the market is decidedly strong, and many who should be well informed in such matters speak with confidence of a still further advance. The Western Nail Association held a meeting in Pittsburgh on Wednesday last, at which the card was advanced 25 cents, to the basis of \$5.25 for rod. There is no disposition on the part of holders here to force sales, and orders for future delivery continue to be declined, except at prices ruling time of shipment. We quote rod, to 6od., \$5.25, net, in small lots, and subject to a discount of 10 cents per keg for lots of 200 kegs and over.

Nickel.—Enjoys a moderate demand at \$1.40 for Prime American.

Old Metals, Paper Stock, &c.—The Old Metal market is not so active this week as it might be, and prices have probably reached as high a point as they are going to. The Rag and Paper Stock market continues very firm.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy.....	per lb. \$0.18	20
Copper Bottoms.....	15½	16
Yellow Metal.....	10	11
Brass, heavy.....	12	13
Brass, light.....	.08½	.09½
Composition, heavy.....	15	16
Lead, heavy.....	.04½	.04½
Tea Lead.....	.04½	.04½
Zinc.....	.03½	.04½
Pewter, No. 1.....	.12	.13
Pewter, No. 2.....	.07	.08
Wrought Iron.....	35.00	37.50
Light do.....	22.50	25.00
Stove Plate.....	15.00	17.00
Machinery do.....	22.50	25.00
Grate Bars.....	10.00	12.50

The prices current for Rags &c., are as follows:

Canvas, Linen.....	per lb. 4½¢	@ c.
White Cotton, New.....	4½¢	@
" No. 2.....	3 c. @	
White, No. 1.....	5½¢	@
" No. 2.....	3 c. @ 3½¢	
Seconds.....	2½¢	c. @
Soft, Woolen.....	16	c. @ 17 c.
Mixed Rags.....	2 c. @ 3 c.	
Gunny bagging.....	4 c. @	
Jute butts.....	2¾ c. @	
Kentucky bagging.....	2 c. @ 3 c.	
Book Stock.....	3½ c. @	
Newspapers.....	2 c. @	
Waste Paper and Scraps.....	1 c. @	
Kentucky Bale Rope.....	4 c. @	

The prices current for Rags &c., are as follows:

Plan 94.—Lexington av., s. w. cor. 107th st., 1st-class brown-stone dwelling, 17x74½, 3 story and basement, tin roof and iron cornice; o. Mrs. E. Davis; a., J. H. Valentine; b., John B. Davis; cost, \$9,000.

Plan 95.—W. s. Lexington av., 17½ ft. s. 107th st., 5 brown-stone dwellings, 16.8x45, 3 stories and basements, tin roofs and iron cornices, hot-air furnaces; o. Ann E. Davis, 158th st. and Kingsbridge Road; a., J. H. Valentine; b. and c., not selected; cost, \$13,000 each.

Plan 97.—E. 52d st., s. s. 121 ft. e. Lexington av., 1 brick and stone trimmed flat, 25x6½, 5 stories, tin roof and iron cornice; o. Edward C. Coggeshell, 158 E. 105th st.; a., George B. Pelham, 56 Wall st.

Plan 98.—S. s. 117th st., 240 ft. e. 1st av., 3 brick and stone flats, 16.8x50, 3 stories and basements, tin roofs and iron cornices; o. A. W. Jenny, 313 E. 154th st.; a., J. H. Valentine; b., William Handwerk; cost, \$6,000 each.

Plan 99.—W. s. Lexington av., from 121st st. to center of block, 6 brown-stone dwellings, 16.8x45, 3 stories and basements, tin roofs and iron cornices; o. W. F. Niebuhr; cost, \$10,000 each.

Plan 100.—N. s. 121st st., 61 ft. w. Lexington av., 4 brown-stone dwellings, 16.8x45, 3 stories and basements, tin roofs and iron cornices, Baltimore heaters; o. Miss F. R. Niebuhr, 226 E. 109th st.; cost, \$8,000 each.

Plan 101.—N. s. 71st st., 100 ft. w. 1st av., 3 brick tenets, 33x76, 5 stories, gravel roofs and iron cornices, hot-air furnaces for halls; o. Improved Dwelling Association; a., Geo. W. Da Cunha, 207 W. 38th st.; cost, \$11,500 each.

Plan 102.—S. s. 72d st., 100 ft. w. 1st av., 3 brick tenets, 33x76, 5 stories, gravel roofs, and hot-air furnaces for halls; o. Improved Dwelling Association; a., Geo. W. Da Cunha, 207 W. 38th st.; cost, \$11,500 each.

Plan 103.—W. s. 5th av., 74 ft. n. 127th st., 1 first-class brown-stone dwelling, 24x60x67, 4 stories, tin roof and iron cornices, and hot-air furnaces; o. H. G. Silleck; a., John G. Prague, 47 Bible House; cost, \$30,000.

Plan 104.—147 and 149 W. 54th st., 1 brick stable, 25x50, 2 stories, gravel roof and iron cornice; o. E. Donnell, 44 W. 58th st.; a., L. N. Crow; c., Maguire & Sloane, 28th st. and 7th av.; cost, \$6,000.

Plan 105.—143 and 145 W. 54th st., 1 brick stable, 25x50, 2 stories, gravel roof and iron cornices; o. E. Donnell, 44 W. 58th st.; a., L. N. Crow; c., Maguire & Sloane, 28th st. and 7th av.; cost, \$6,000.

Plan 106.—E. s. 1st av., 75 ft. n. 115th st., 1 brick store and dwelling, 25x57, 4 stories, tin roof and iron cornices; o. James Riely, 115th st., cor. 1st av.; a., John B. McEntyre, 809 E. 82d st.

Plan 107.—E. s. 1st av., bet. 113th and 114th sts., 11 brick tenets, 18x52, 4 stories, tin roofs and iron cornices; o. Duffy Bros., 1830 3d av.; a., Andrew Spence, 90 Nassau st.; b., not selected; cost, \$9,000 each.

Plan 108.—1st av., e. s. 1 on n. e. cor. 113th st. and 1 on s. e. cor. 114th st., 2 brick stores and dwellings, 19.11x66, 4 stories, tin roofs and iron cornices; o. Duffy Bros., 1830 3d av.; a., Andrew Spence, 90 Nassau st.; cost, \$11,000 each.

Plan 109.—420 E. 115th st., 1 brick dwelling, 25x50, 4 stories, tin roof and iron cornice; o. John Taylor, 199 W. 11th st.; a., Wm. Kurnic; b., James O'Meara, 85 Laurence st.; cost, \$6,000.

Plan 110.—33 and 37 E. 17th st., 1 brick and stone-trimmed store, 71.6x120x18x4, 6 stories, fire-proof or mansard roof, slate and tin, steam heating; o. Richard Arnold and Henrietta Constable, cor. 19th st. and 5th av.; a., Wm. Scheickel, 346 Broadway; cost, \$20,000.

Plan 111.—N. e. cor. Av. A and 70th st., 1 brick planing mill, 52x72, 3 stories, tin or gravel roof, brick and stone cornices; o. J. E. Doying, 112th av.; a., James E. Ware, 697 Broadway; cost, \$12,000.

Plan 112.—W. s. 4th av., 80 ft. n. 5d st., 1 brick and brown-stone office, 18x45, 2 stories, tin roof and iron cornice; o. McCafferty & Buckley, 163 E. 54th st.; a., R. W. Buckley.

Plan 113.—1st av., n. w. cor. 85th st., 1 brown-stone store and dwelling, 26.8x60, 4 stories, tin roof and iron cornice; o. O. W. Loefler, 113 E. 77th st.; a., J. C. Burne; cost, \$15,000.

Plan 114.—W. s. 1st av., 26 ft. s. 85th st., 3 apartment houses, with stores, 25x60, 4 stories, tin roofs and iron cornices; o. O. W. Loefler, 113 E. 77th st.; a., John C. Burne, 3d av. and 86th st.; cost, \$14,000.

Plan 115.—327 E. 28th st., rear, 1 brick foundry, 25x50, 1 story, gravel roof; o. L. D. Conover, 34 E. 29th st.; b., J. N. Brown, 23 W. 13th st.; cost, \$6,750.

Plan 116.—209 W. 58th st., 1 brick stable and dwelling, 25x50, 3 stories, tin roof, brick and iron cornice, hot-air furnace; o. W. N. Griswold, 744 Broadway; cost, \$10,000.

Plan 117.—S. w. cor. 9th av. and 45th st., 2 stores and dwellings, 22.5x28x54, 5 stories, tin roofs and iron cornices; o. John C. Barklage, 647 9th av.; a., John W. Forster, 407 W. 40th st.; cost, \$8,000 and \$10,000.

ALTERATIONS.

Plan 118.—W. s. 3d av., 25 ft. s. 152d st., to build frame ext'n, 25x71, 1 story, tin roof; o., Meiser & Volmer, on premises; c., John Frisch.

Plan 119.—256 4th av., to add 1 story on brick dwelling, with mansard roof; o., R. Roosevelt.

Plan 120.—6 Gouverneur st., to rebuild front wall, 14 ft. high, 8 in. thick and put on new roof; o., Grochel & Hess; c., Thomas Green, 52 Broadway.

Plan 121.—1st av., 25 ft. s. 169th st., to build brick ext'n, 25x11, 1 story, tin roof; o., John Eichler, on premises.

Plan 122.—5th st., s. s., bet. 6th and 7th avs., No. 114, Adams and Rogers agt. John W. Wolf, owner, and John A. Wyman, debtor—claim, \$202,80.

MECHANICS' LIENS.

New York.

Feb. 9.—E. s. Cortland av., bet. 140th and Denman sts., 75 ft. s. Denman st., and extending 25 ft.; James M. Coldwell agt. John Alp—claim, \$115,27.

Feb. 12.—59th st., s. s., bet. 7th av. and Broadway, Park View Flat; Michael Brennan agt. Bronheimer, owner, and John Keleher, contractor—claim, \$229,59.

Feb. 12.—23d st., s. s., bet. 6th and 7th avs., No. 114, Adams and Rogers agt. John W. Wolf, owner, and John A. Wyman, debtor—claim, \$202,80.

Brooklyn.

Feb. 9.—N. s. Putnam av., 183 ft. e. Franklin av., thence e. 16.8x100; S. E. C. Russell agt. Geo. H. Goodmanson, debtor, and Ed. Clarke & Jones, and the Angell & Blae Mfg. Co. and W. H. Attwater, contractors—claim, \$34,25.

Feb. 12.—s. DeKalb av., rec. ft. e. Marcy av., th

BRANDS OF TIN PLATE.

BRIGHT.

Cookley &
M.F.,
Pontymister,
Talbot,
Melyn,
P. S. & Co.,
Kinley,
Allaway,
P.M.,
Machen,
Shuria,
Old Castle,
Yspitty,
and many others
equally well
known.

MAKERS' BRANDS ONLY.

ROOFING.

M.F.,
Pontymister,
Talbot,
Melyn,
Osterbed,
Worcester,
S.T.P.,
Garth,
Allaway,
Dean,
Ynis,
D.H.D.,
M. & J.,
Old Castle,
and many others
equally well
known.

We do not import any Tin Plates under Private Brands. Those desiring well known and reliable grades can have their orders filled promptly.

MERCHANT & CO., PHILADELPHIA.

All Goods Guaranteed as Represented.

Choice Brands Bright Tin.

"EXCELLENT." Very fine quality at low price.

"REGENT." Extra fine, packed with tissue paper, &c.

ROOFING OR TERNE PLATES { 14 x 20 and 20 x 28. Every brand from M. F. down.

CHEESE VAT AND DAIRY TIN All sizes.

PEERLESS SOLDER Guaranteed best in the market.

RIVETS Agents for Plymouth Mills.

COPPER Agents for Revere Copper Co.

IRON CLAD MILK CAN TRIMMINGS.

In stock, Everything required by the Tin & Stove Trade.

PLEASE WRITE FOR PRICES.

GUMMEY, SPERLING, INGRAM & CO.,

830 Market Street, Philadelphia.

F. H. LAWSON & CO.,

Importers and Dealers in

TIN PLATE AND METALS

Sheet Iron, Stamped, Japanned and Granite Iron Ware,

TINNERS' SUPPLIES.

188 and 190 Main Street, CINCINNATI, OHIO.

BURKE & CONWAY,
208 Water Street, New York,

MANUFACTURERS OF

WROUGHT AND CAST-IRON HOT-AIR FURNACES,

Brick Set and Portable Ranges, Stoves, Hollow Ware, Sinks, &c.

Full lines of patterns suitable to all parts of the country, embracing those made by the late GIBBS, BURKE & CO. Sole manufacturers of

BURKE'S PATENT HOT-AIR RANGES,

HAVING THE

ONLY ROASTING AND BROILING OVEN IN THE WORLD.

All fumes carried directly from the oven to the fire, where they are consumed, thus preserving the house free from their odors.

THE BICKELHOUPt
Pat. Metallic Skylights, Ventilators, &c.



Manufactured solely by
BICKELHOUPt BROS.,
329 W. 37th St., New York.
Send for Illustrated Catalogue.



HALL & CARPENTER,

709 Market St., Philadelphia,

Tin Plate and Metals.

Sheet Zinc, Sheet Iron, Sheet Copper.

We import only MANUFACTURERS' BRANDS.

All goods guaranteed to be as represented, and at

LOWEST MARKET PRICES.

MONITOR TIN PLATE WORKS,

54 Cliff Street, New York,

Manufacturers of

LARGE TINNED SHEETS for DAIRY and OTHER PURPOSES, COTTON CANS
and all special sizes, shapes, gauges and qualities, from 10 to 40 inches wide, 10 to 96 inches long.

Guaranteed Equal in Every Respect to Best Imported.

OFFICE OF

U. S. STAMPING CO.
MANUFACTURERS OF
PLAIN, JAPANNED & STAMPED TIN WARE,



PATENT STREET LAMPS, and
Patent Self-Righting Cuspadores,
56, 58 and 60 Beekman St., N. Y.

P. O. Box 4291.

Factories: Portland, Conn

NEW YORK, December 15, 1878.

To the TRADE: We would call your attention to our

Patent Self-Righting Nickel-Plated Cuspadores

We can quote special figures on large quantities. Awaiting your orders, we are,
Yours truly,

UNITED STATES STAMPING CO.

LE COMTE & PERKINS MFG. CO., Limited,

Of Philadelphia and New York.

TIN WARE,

Housefurnishing Goods,

OIL, PAINT AND SQUARE PETROLEUM CANS.

81 Beekman Street, New York.

S. HOROWITZ,

Manufacturer of and Jobber in

TIN WARE,

Stamped,
Japanned.

N. W. Cor. 7th and Main Sts., CINCINNATI, OHIO.

E. H. Huenefeld,

Importer and Dealer in

TIN PLATE AND METALS,

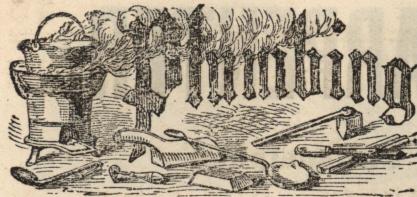
Japanned and Stamped Ware, Sheet Iron, Zinc and
TINSMITHS' SUPPLIES in GENERAL.
Nos. 295 and 297 Main St., Cincinnati, Ohio.

CINCINNATI TIN AND JAPAN MFG. CO.,

Jobbers in
PLAIN, STAMPED & JAPANNED WARE,

Tin Plate, Metals and Tinners' Supplies, Stoves, Stove Boards, Coal Vases and Hods, Stove Pipe and
Elbows, Drip Pans, &c. Also full line of miscellaneous goods for 5, 10 and 20 cent tables. Goods at
astonishingly low prices.

CINCINNATI TIN AND JAPAN MFG. CO., 49 West Pearl Street, Cincinnati, Ohio.

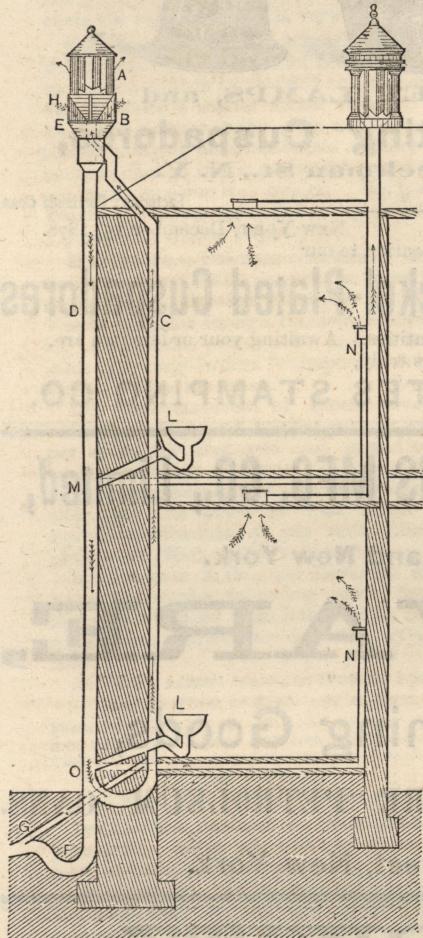


Double-Action Soil Pipe Ventilator.

Messrs. Boyle & Son, of London, England, are bringing out what they call a double-action soil pipe ventilator, which is attracting much attention upon the other side of the water. It is a combination of a down-cast with an up-cast ventilator. As shown in Fig. 1, A represents the "air pump," or extracting ventilator, connecting with the "up-cast" or ventilating pipe, C. The down-cast ventilator B, forming the lower portion, communicates with the soil pipe, D. From the arrangement of the plates or divisions, E, it presents an open mouth like a wind-sail to the wind, from whatever quarter it may blow, forcing the air down the soil pipe and up the ventilating, as indicated by the arrows.

The following detailed description of the apparatus, and the rather extraordinary arrangement of plumbing work accompanying it, we take from an English paper :

"By means of the two ventilators double power is obtained, the force of the wind driven down and the suction of the extracting ventilator keeping the soil-pipe aerated, and perfectly free from poisonous gases, which are not allowed to lodge or accumulate in the pipe. This ventilator has also the merit of being a fixture, with nothing movable to get out of order or make a noise. The fact of the air-inlet being at such an elevation insures a supply of air, and a force unattainable at a lower level. Assuming, however, that there was no movement in the air—a state of things which, according to high scientific authority, never exists—with this system there would still be a through current on the siphon principle, owing to the mouth of the down-cast pipe being lower than that of the up-cast. The soil pipe is shown outside the house, so that the up-cast pipe may have the benefit of the heat in the house, which tends to rarify the



Soil Pipe Ventilator.—Fig. 1.—A B, Double Ventilator. D, Down Cast Shaft. C, Ventilating Pipes. O M, Water Closet Connections. L L, Soil Pipe Vents. G, Ventilating Branch for Sewer Connection. N N, Fresh Air Openings from Pipe D. E B, Down Cast Portion of Ventilating Cowl.

column of air, and which also derives a greater velocity from the colder and heavier air in the outside pipe rushing toward it and forcing it out at the top. The soil pipe, however, can be placed with safety inside the house if desired so. The figures indicate $\frac{1}{2}$ inch pipes to ventilate the discharge pipes connected with the w.c.'s [water closets] and prevent the traps being un-siphoned by the passage of matter down the soil pipe. The drain trap is seen at F, while G is a 2-inch ventilating pipe connecting the drain with the up-cast pipe, where no provision is made. It is also shown in figure No. 1 how Messrs. Boyle ventilate the w.c. [water closet] by means of one of their air-pump

ventilators placed on the roof, with a main pipe led down the wall and connected by means of a branch pipe with the center of the ceiling. The fresh air is admitted through a vertical tube placed against the wall close to the door, so that the current of air will always have a direction from the door to the ventilator. The vertical tube is connected underneath the floor with an opening through the wall communicating with the external air. The ventilators are shown larger in proportion than they would be in reality for the purpose of making their construction plain. Figure No. 2 shows the system of soil-pipe ventilation, which is at present most generally adopted. B is a

trap placed between the house and the sewer. In the first cut this always useless appendage is cut off from the work which it is put in to do by means of the pipe G, which acts as a by-pass and permits the sewer to breathe through the house ventilating system precisely as though there was no trap in the main soil pipe.

The word "unsiphoned" will strike most of our readers as a novelty. Perhaps this very peculiar apparatus needed an unusual word in order to bring out its merits. We fear, however, that the half-inch vent pipe will hardly prevent the water-closet traps from being siphoned by a heavy flush of water from a bath tub.

English Lectures to Plumbers.

In London considerable interest is felt at the present time in providing courses of instruction for practical men in various branches of the mechanic arts. The subjects of house drainage, ventilation, light and warmth are all included in a list of addresses to be given to the plumbers of London at the Parkes Museum of Hygiene, which at present is located in University College, in Gower street. These addresses are accompanied by a series of practical demonstrations, and are given on alternate Saturdays. Prof. Corfield, who seems to have some little reputation on the other side as an expert in matters pertaining to house drainage, delivered the first address on January 3. The following is a summary of his remarks. He first drew attention to various kinds of drain pipes in use in houses. Those pipes, instead of being made of brick, ordinary tiles, or other pervious material, as was generally the case, should be composed of some impervious material, so that the foul water could not soak through. They should be made of glazed stoneware, and should be jointed in a very different manner to that now generally adopted. He discouraged the use of cement for joints, and described a patent gutta-percha rim to the ends of the pipes, which, by the use of a little grease, could be connected and rendered water-tight. Instead of bell traps for yards, siphon gulley should be used, and after referring to various road gulley and flush tanks, Professor Corfield described some traps intended to disconnect the soil-pipes and sinks from the house sewers, which it was important should be used, provided there was an air inlet from the drain. A number of examples of defective plumbing, chiefly associated with the old D trap, were next given, and the Professor strongly discouraged the use of those traps, which were contrivances which caught a great deal of solid matter, and instead of those traps he advocated the adoption of valve siphon-traps. Every one of the instances of the defects in the joints which he illustrated was connected with a case of disease or death. He also particularly drew attention to a D trap which had been several times mended, and was composed chiefly of zinc, and he said that it was the most extraordinary specimen of scamped work that he had ever witnessed. Drawn-lead [rolled] or, even better, cast-lead—siphon traps, with screw taps for the purpose of inspection, were far better than D traps, and should be used in sinks. Explaining some patent sinks, which obviated stoppage by potato parings and other rubbish, the Professor stated that they were largely in use in model dwellings, and the same patentee's closets were adopted by several large companies in London. At the close of the address, which created considerable interest, the Professor received the hearty thanks of the assembly.

It is pleasing, at least, to see what a perfect confidence the author of the extract displays in the arrangement and apparatus described. We cannot understand the English prudery which makes it improper to write water-closet in full, and yet attracts especial attention to the words by printing the abbreviation "w.c."

Messrs. Boyle & Son display more ingenuity in the arrangement of their ventilator than wisdom in the plan of their plumbing apparatus. It becomes necessary to speak of their plans at some length, because of the fact that these drawings have been copied and commended by one or two American papers. In Fig. 1 the downcast shaft is represented as supplying fresh air to the soil pipe, and in its lower portion acting as a soil pipe itself. Yet out of this pipe, at the points M and O, Fig. 1, fresh air is taken to be delivered into the house at N N. A more insane idea could hardly be imagined. It is quite likely that the pipe at L', by forming a communication through the soil pipe of the water closet, would interfere somewhat with the circulation further down.

The external soil pipe, a thing quite impossible in this climate, is frequently commended by English and Continental authors. It doubtless has its advantages, and might perhaps be used in the more southern portion of this country, where the winters are not severe. In Fig. 1 the downcast shaft is represented as supplying fresh air to the soil pipe, and in its lower portion acting as a soil pipe itself. Yet out of this pipe, at the points M and O, Fig. 1, fresh air is taken to be delivered into the house at N N. A more insane idea could hardly be imagined. It is quite likely that the pipe at L', by forming a communication through the soil pipe of the water closet, would interfere somewhat with the circulation further down.

People very commonly forget that ventilation by means of heat or the difference in temperature between the air outside the pipe and that within, is the cheapest and best means for ventilation. When it fails, it commonly does so in calm, still summer weather, just at the time when a cowl or hood working by the action of the wind is also inoperative.

would appear that the work is even worse than that which is put into some of the worst of New York contract houses.

Carrying Soil Pipe Through the Roof. —Size of Pipe.—Location of the Pipe and Its Outlet.—Sewer Gas.

From SUBSCRIBER, —.—Will galvanized iron answer for the continuation of the soil pipe from the uppermost fixture to the roof, for ventilating purposes? Will a 3-inch pipe answer for this purpose? In carrying a ventilating pipe up beside a chimney, is there any danger of the gas being blown down the chimney? When sewer gas mixes with pure air, are all its poisonous properties destroyed? In ventilating a number of water-closets in a low, one-story building by a single flue, which rises a couple of feet above the roof, is there not danger that the gases would be blown into the open windows of higher buildings which are in close proximity? What is the nature of the deposit found upon the inside of bath and basin waste pipes? Is the gas which arises from these deposits injurious?

Answer.—We are not prepared to say that a spiral galvanized iron pipe of the pattern common in the market would not answer for the continuation of the soil pipe, provided there was a free communication with the sewer so that there would be a good circulation of air. Galvanized iron, however, is not a very durable material for the purpose, and though cheap, might prove costly in the end. The joints should be perfectly tight throughout the whole length, and the connection between the extension and main soil pipe must be tight, air-tight under pressure. The reader will understand that while we have not had any experience with pipes of this kind, we can hardly be expected to commend highly a pipe which, on many accounts, there are reasons to distrust. In many situations a galvanized wrought iron pipe is not worth the labor of making and putting up. Galvanizing iron in situations where zinc is rapidly attacked, is worse than useless.

We say most emphatically that a 3-inch pipe will not answer for the ventilation of a soil pipe. It should be carried full bore to the roof. Unless this is done there is always liable to be danger from siphoning, and at the same time the circulation of air through the pipe is not good. If a 4-inch soil pipe is used in the main line its area will be $12\frac{1}{2}$ square inches, while the area of the 3-inch pipe is only 7 inches. A 5-inch pipe has an area of 19 inches. This reduction of size has an even more injurious effect upon a current of air than upon water.

—So far as danger from the sewer gas going down the chimney is concerned, we do not think that there need be any apprehension. To this point we wish to call especial attention. When there is a down draft in a chimney the external air is warmer than that within the house. This commonly happens in the early summer and upon warm days which follow immediately after quite cool ones. The air in the chimney then cools and falls into the house, while that outside enters the top of the chimney and takes its place. When this is going on in the chimney the same is likely to be going on in the soil pipe, for at such times the sewer is breathing inward. In other words, the current in the sewer is downward; as the soil pipe is at the same time cooler than the external air, there is a downward draft toward the sewer. We can imagine that there might be an upward current of gas in the soil pipe and downward in the chimney. It would be difficult, however, to guess what the circumstances would be. A rain which would reverse the current within the sewer and soil pipe would cool the external air so that the draft in the chimney would again be upward, and no harm would follow.

Sewer gas mixed with any considerable quantity of fresh air loses its poisonous qualities. When there is an abundance of fresh air passed through the sewers, they become perfectly harmless, and the poisonous character of the sewer gas or sewer air is no longer to be found. It appears to be no longer generated. If all parts of the sewers and soil pipes could be perfectly ventilated, there would be no longer any danger from breathing sewer gases. The objections which some people have to ventilating the sewers because it would bring poisonous gases out into the street, would disappear the moment the sewers were ventilated, because there would be no poison to distribute in the street.

There is danger, however, in the present condition of the sewers of most towns and cities in this country in allowing the gases from our ventilating pipes to come near open windows. In the case our correspondent mentions, it will be necessary to carry the ventilating pipe or pipes from the water closets up to the level of the roof of the higher building. This is upon the supposition that the two buildings join each other. In most places there are not ventilators enough to keep sewers and soil pipes fresh and prevent the formation of the gas.

The dirt or deposit found upon the inside of bath and basin wastes seems to be composed of soap, dirt from the human body, dead skin and the oily perspiration washed off by the aid of the soap. It is as foul and disgusting as almost any of the deposits found upon the inside of waste and soil

JENNINGS'
Sanitary Depot.
A. G. MYERS, Manager,
94 BEEKMAN ST., NEW YORK.

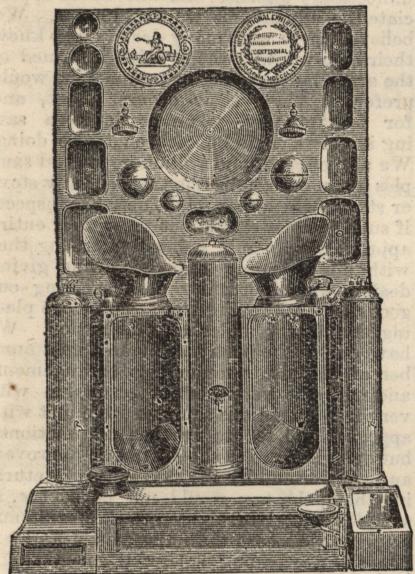
JENNINGS'
WATER CLOSETS,
IN ONE PIECE OF CHINA, ALSO PART IRON,
and other Sanitary specialties.

FIELD'S FLUSH TANK.
Also FIELD'S FLUSHING CISTERNS, for scouring automatically the soil pipe both inside and outside of dwellings.
Waring's Sewer Gas Check Valves.

PATENT SIPHON FOR
FIELD'S FLUSH TANK. WEAVER'S WASTE REMODELED AND IMPROVED.



HENRY STEEGER & CO.,
Manufacturer of
COPPER BOILERS,
SHOWERS, BATH TUBS,
CLOSET PANS, PANTRY SINKS, FOOT AND
SEAT TUBS.



The weight of the Copper in my
BATH TUBS is designated by
this stamp.

143 and 145 East 31st St., N. Y.

Eckel's Patent Eave Trough.

In offering to the trade our long Eave Gutter, we would say that it is far superior to the old style of gutter (made in 14 or 20 inch lengths), for the reason that in our gutter you have only 4 seams in 24 feet, when, if made of 14 inch tin, you have 20 seams, and if made of 20 inch tin you have 14 seams. We pack samples carefully. Send for sample and be convinced of its superiority. Machines and State rights for sale only. Address

GEORGE ECKEL & SON,
Richmond, Ind.

WM. ESTERBROOK,
Wholesale Manufacturer of

Coal Hods,

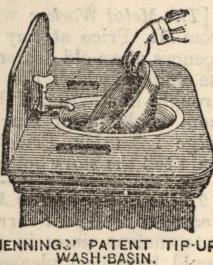
311 Cherry St., PHILADELPHIA.

COLWELL LEAD CO.
LEAD PIPE, SHEET LEAD, SHOT,
ALSO,
Plumbers', Steam and Gas Fitters' Sup-
plies of all kinds.

FACTORY AND OFFICE, 63 Centre & 524 Pearl Sts.
Uptown Stores, 1416 Broadway.



All kinds of PLUMBERS' Goods having for their especial object Cleanliness, Durability, and the thorough Exclusion of SEWER GAS.



JENNINGS' PATENT TIP-UP WASH-BASIN.

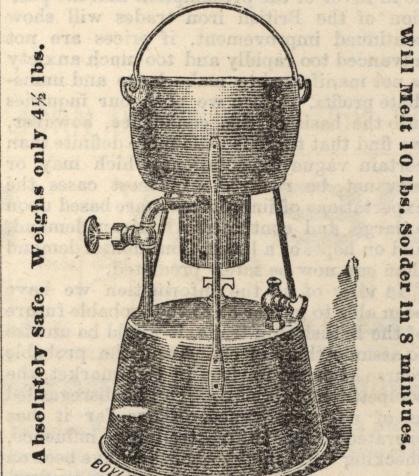


MADDOCK Patent
Porcelain Trap and Check Valve.

We Manufacture
All kinds of
**Plumber's
EARTHENWARE.**

W. W. PERRINE, Manager, 94 Beekman st., New York.

PLUMBER'S BLAST FURNACE.



Absolutely Safe. Weighs only 4½ lbs.
Will Melt 10 lbs. Solder in 8 minutes.

Price only \$7.50.
Cooper, Jones & Cadbury,
No. 13 North 7th St., Philadelphia.

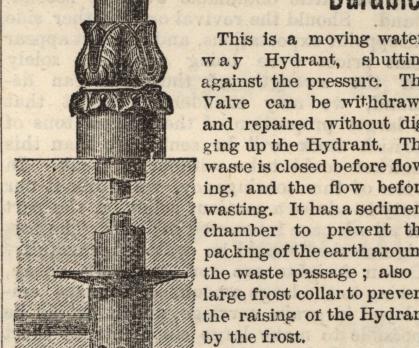
BAILEY'S
PATENT

Wrought Iron Stock
Compression Valve

Hydrant

Effective
Simple.

Durable.



This is a moving water way Hydrant, shutting against the pressure. The Valve can be withdrawn and repaired without digging up the Hydrant. The waste is closed before flowing, and the flow before wasting. It has a sediment chamber to prevent the packing of the earth around the waste passage; also a large frost collar to prevent the raising of the Hydrant by the frost.

MANUFACTURED BY

Bailey, Farrell & Co.,
PITTSBURGH, PA.

PRICES.—Hydrant to set in ground 3 feet, \$6.00.
Hydrant to set in ground 4 feet, \$6.60.

RUMSEY & Co.
(Limited),

SENECA FALLS, NEW YORK, U. S. A.

The largest Pump works in the world. Over 800 different styles Steam Pumps, Rotary Pumps, Centrifugal Pumps and Piston Pumps, for Tannery, Paper Mills, Fire purposes, and for all situations imaginable. Also Hand Fire Engines, Hook and Ladder Trucks, Hose Carts and Fire Department Supplies generally.

Rumsey's Pumps,
and write for Catalogue to

RUMSEY & CO.,
Seneca Falls,
New York, U. S. A.

Warehouse: 93 Liberty St., New York City.

DREYFUSS & SACHS
PERFORATE

TIN AND METAL

For the Trade.

Samples furnished on application.

75 & 77 Duane St., New York.

New York.

A Book for Plumbers.

SECOND EDITION.

**HOUSE DRAINAGE &
WATER SERVICE**

IN
Cities, Villages & Rural Neighborhoods.

BY
JAMES C. BAYLES,
Editor of "The Metal Worker" and
"The Iron Age."

Illustrated with Wood Cuts and Large Plates Photo-Engraved from Working Drawings, showing the Methods of piping employed in the best Plumbing Practice of the Time.

The publisher has pleasure in announcing a large and steadily increasing demand for the Second Edition of this standard work, which is the only book that fully and exhaustively discusses the principles and mechanical details of American plumbing practice. Its especial value for the practical plumber will be seen from the following synopsis of its contents:

Chapter I.—Hygiene in its Practical Relations to Health.

This chapter is introductory, giving a brief sketch of the progress which has been made since the Middle Ages in reforming evils prejudicial to the public health, and showing by comparisons drawn from modern architectural practice and mediæval records what progress we have made toward securing health and comfort in house building, and wherein our architecture is still a long way behind our knowledge of Nature's laws.

Chapter II.—Sewer Gas.

A careful inquiry into the nature and action of the gaseous products of organic decomposition in sewers, cesspools, drains and waste pipes. The subject of sewer-gas poisoning is fully considered, and the importance and methods of sewer ventilation discussed.

Chapter III.—Waste and Soil Pipes.

Chapter IV.—Traps and Seals, and the Ventilation of Waste Pipes.

Chapter V.—Water Closets.

Chapter VI.—Service Pipes and Water Service in City Houses.

Chapter VII.—Tanks and Cisterns.

These chapters are strictly practical, dealing with the various house fixtures in general use, and discussing every detail of plumbing work. The examples of good and bad practice are drawn from what the author has seen in the great number of dwellings, hotels and public buildings he has inspected in nearly all parts of the country, and in themselves these five chapters constitute a complete manual of house drainage and water service.

Chapter VIII.—The Chemistry of Plumbing.

This is probably the most valuable chapter to be found in the whole literature of sanitary science. Its compilation entailed a vast amount of research and a great deal of careful laboratory work in tests, analyses, &c. It is an exhaustive discussion of the action of waters of various composition upon each of the metals employed in plumbing practice, under all the conditions likely to exist. The results of these researches and investigations are stated in the simplest language and made clear to all classes of readers.

Chapter IX.—Elementary Hydraulics Applicable to Plumbing Work.

Intended chiefly for the use of plumbers and others who encounter difficulties in conducting and raising water, and giving much valuable information concerning pipes, storage tanks, cisterns, pumps, hydraulic rams, and the various methods of applying power in pumping.

Chapter X.—Sanitary Construction and Drainage of Country Houses.

Chapter XI.—Water Supply in Country Districts.

These chapters deal exclusively with conditions existing in villages and country districts. The former discusses causes of unhealthfulness in location, construction, drainage and surroundings; the latter considers the sources of water supply, the care of wells, springs, &c.

Chapter XII.—Suggestions Concerning the Sanitary Care of Premises.

This chapter relates to the care of premises, the removal and treatment of filth, the functions and employment of disinfectants, &c.

Chapter XIII.—The Plumber and His Work.

A discussion of the relations of the plumber to the architect, the builder and the public, and placing the responsibility for the bad plumbing work of the time where it properly belongs.

"House Drainage and Water Service" is a large octavo book of 360 pages, with a full index and side notes on every page to facilitate reference and search. It is substantially bound in English muslin, with beveled edges.

It is a book no plumber whether in city or country, expert or beginner, can afford to be without. A standard work of this kind is invaluable to the plumber, not only for his own information on many subjects connected with his business, but for use with his customers in strengthening and confirming his arguments in favor of honest materials and good workmanship in whatever pertains to the drainage and water supply of a house. The mistaken economy of house owners in encouraging a system of reckless competition for contracts at prices below the cost of good materials and honest labor, is doing much to demoralize the trade and the plumber who is honorably ambitious to do good work at an honest price which will give him a living profit, will welcome so valuable an ally in the cause of reform as Mr. Bayles's book.

SENT POSTPAID ON RECEIPT OF PRICE, \$3.

DAVID WILLIAMS, Publisher,
83 Reade St., New York.

Baltimore Terra Cotta Works.

N. M. RITTENHOUSE,

Manufacturer of

Stove Brick Linings,

Square, Key and Wedge Fire Brick,

Cupola Brick and Slabs,

VITRIFIED DRAIN AND SEWER PIPE

With Connections.

Yard foot of Cross St., BALTIMORE.

Send for price list.

pipes. The poison which makes us dread to breathe the air of sewers and cesspools, seems to be as readily formed when this deposit decays as it is when the inside deposit of a soil pipe is undergoing decay and fermentation. So far as experience goes it seems to prove that the most deadly poison, whatever it may be, to which we give the name of sewer gas, is formed within the soil pipes of the house. The air of the main sewers themselves is not so particularly harmful, as is proved by the fact that people can enter them freely and work in them for a long time without feeling any symptoms of sewer gas poisoning. On the other hand, a person cannot sleep in a room into which the air from a soil pipe is discharged without feeling ill effects from it.

While we cannot tell just what the poison is which passes under the general name of sewer gas, we are very fortunately able to state just what must be done in order that we may not suffer from the evil effects of it.



Probably no questions have equal interest for all classes of our readers at the moment with those which relate to the probable course of the iron market during the next few months. The recent history of this trade has been so remarkable that it is not to be wondered at that clear-headed, far-sighted business men are confused, and that they find themselves more inclined to wonder what will come next than to reason out a business policy and follow it. In times like these enthusiasm and confidence are infectious. Few men have sufficient independence of judgment to act as they think best, without regard to what their neighbors think and do. Naturally, therefore, the prevailing opinion in the iron trade is that the era of prosperity upon which we have entered will last indefinitely into the future, and that prices will certainly be sustained, and perhaps advanced. We are not prepared to dispute this opinion. Indeed, there is much to warrant it. The conditions under which the extension of our railroad system is carried forward, are such that the consumption on this account is not likely to be checked in any important degree by high prices. Consumption for other purposes than railroad construction and equipment promises to continue large for as long a time as we can see into the future. The increase in the production of our furnaces has not equaled expectations, chiefly owing to the lack of adequate supplies of ores; the contracts for ore deliveries after the opening of navigation are being placed at prices which preclude the possibility of cheap iron made from them; and with a very slight increase in the demand—such an increase as may be counted on a few weeks hence—we shall, perhaps, come as near to an iron famine as we have ever been in the history of the country. All these facts are certainly elements of strength, and in view of them it is natural that holders of iron are firm in their views, and that predictions of an advance to \$45 for No. 1 in the Eastern markets are freely made and generally accepted as probable. If we had only local conditions to consider, no one would make a mistake who should buy iron even at present prices on speculation; for, considering the exceptionally favorable condition of the country and the satisfactory state of the national finances, there is no reason to fear sudden panic or a collapse without warning. But to know what to expect for the future we must look abroad, as well as at home. For the moment there seems to be but little to fear from the competition of foreign irons in our markets. The decided improvement in the condition of the iron business on the other side, encourages the hope that the amount which can be spared for this country will not be so great as to more than supplement the now insufficient domestic production, and that the prices of foreign irons, if not advanced, will at least be sustained at a point which will cause no interference with the more desirable domestic irons, which are preferred for most uses, even when the difference in price is considerably in favor of foreign irons. But suppose the improvement on the other side is fictitious! Suppose it shall be found that it is only a reflex of the improvement in the United States, and that the advance in prices is chiefly the result of a quickened speculation, based on the expectation of a large and increasing American demand! Suppose from any one of a dozen possible causes the expectations of a large demand from other countries are disappointed, and that to prevent a disastrous decline as much English and Scotch iron as can be spared is unloaded on the American market, with instructions to force its sale at the best prices which can be obtained! These are among the possibilities of the near future, and if they are realized we shall see a change which will make some of those who are holding pig iron for \$45 wish they had sold at \$40, or kept

out altogether. If, on the other hand, the effect of the American revival is felt in an increased consumption throughout the world, and prices are sustained in Europe on the strength of a legitimate demand upon the surplus stock in Great Britain, we have nothing to fear.

From the best information we have been able to obtain, it seems to be still too soon to answer the questions which this view of the position of iron naturally suggests. No better evidence of the uncertainty of the position and prospects of the British iron trade is needed than is furnished by the letter of the well-informed English correspondent of *The Iron Age*, whose letter appears in the issue of that journal for Feb. 12th. From this we learn what many have suspected, that the English newspapers have for some time past been talking as cheerfully as possible about the outlook for iron, expecting thereby to effect an improvement in all departments of trade. Opinions differ as to what may be expected in the future, but the weight of the best authority seems to be in favor of the presumption that the position of the British iron trades will show continued improvement, if prices are not advanced too rapidly and too much anxiety is not manifested to make large and immediate profits. When we push our inquiries into the basis of this confidence, however, we find that there is little more definite than certain vague expectations which may, or may not, be realized. In most cases the expectations of improvement are based upon a large and continued American demand, and on hopes of a larger Continental demand than can now be safely predicted.

In view of all the information we have been able to gather as to the probable future of the British iron trade, it would be unwise to assume that, in estimating the probable course of prices for iron in this market, the competition of foreign pig can be disregarded as of no consequence. Thus far it has operated only as a steady influence, checking what might otherwise have been an advance so rapid as to force a sharp contraction of consumption. Were the supply of domestic pig equal to the requirements of the market, foreign pig would be neglected. There is no apparent disposition to use it when American brands, with which foundry and mill managers are entirely familiar, can be had at or about the same prices. But the difference in favor of Scotch and English irons, as compared with corresponding grades of native pig, is so great in some instances as to attract the attention of consumers, and we learn that it is being experimented with on a large scale. When these experiments are intelligently conducted there is every reason to believe that the results will be satisfactory enough to satisfy all reasonable expectations; and that such is the fact is shown by the increasing consumption of these irons. Prejudice in favor of domestic pig has to be strong to stand in the way of the use of foreign when it can be had from \$5 to \$8 per ton cheaper than the nominal quotations for domestic pig, with none of the latter offering, and but little obtainable even at second-hand. Should the revival on the other side disappoint expectations, and the fact appear that prices were being advanced solely on the strength of the American demand, we may confidently expect that a larger proportion of the million tons of British stock will be sent here than this market could take without a break. In view of this contingency, we think it our duty to advise a cautious policy on the part of all who are interested in iron. The foreign market should be watched carefully. Ocean freights are comparatively cheap, owing to the large amount of tonnage employed in grain carriage, and it would be possible to make large shipments at short notice. It is not supposable that, if there is no better demand from other countries than can now be counted on, foreign makers will continue to hold iron when it can be sold in this country at a profit, even though the price realized was considerably under the present average of the market here. There seems to be no ground for anxiety respecting American consumption; but if it devolves upon us to consume all the surplus stock in Great Britain, the outlook is better for the consumer than for the producer.

Water Street, N. Y.

During the past week we have received two letters relating to the history of the stove business of Water street, N. Y., by the venerable "Jeems, the blackener," which appeared in our last issue. We give them below:

MENDOTA, Ill., Feb. 4, 1880.

To the Editor of *The Metal Worker*.—Allow me, through the medium of your valuable paper, to thank "Jeems" for his reminiscences of the stove trade in Water street. Having been acquainted with all the prominent stove men from 1840 to 1856, it brought to my mind many pleasing recollections of those days, and of the men who were—Southard, Liddle, Utter, Philip Rollhaus, Sanford and many others. I have long had the curiosity to know who "Jeems" is. I have been very much pleased with his contributions to *The Metal Worker*, and wished that I might have a better acquaintance with him. I hope he will give us more of the same sort in the

future. I may some time add my experience as a stove dealer for the benefit of the younger men who are engaged in the business, as I find by looking back and counting up the years that I am getting to be one of the old men. Respectfully yours,

W.M. PRICE.

[*The Metal Worker* will be glad to hear from Mr. Price at any time. The reminiscences of an old dealer who has witnessed the changes which the past 25 years have wrought in stoves and the methods of selling them would be of much interest, and we judge from Mr. Price's letter that none could tell the story better than he.]

To the Editor of *The Metal Worker*: I was pleased to read your correspondent "Jeems" as to ancient times in the stove trade, and would have been pleased to help him in his communication had I known the object of some of his inquiries, and to make more perfect his history of men and things. I propose to introduce to your readers some of the pioneers of the stove trade who are now at rest, and some who are not at rest. I found many years since a plate of iron on which was cast the following: "Wm. Lyle, hot-air furnace, New York, 1767." This was taken out of a house on the west side of the town, opposite the City Hall. I have never been able to trace any one that ever knew Wm. Lyle as a furnace maker or locate him in the business.

The next oldest in the trade is Geo. Youle, who occupied store No. 296 Water street. He made stoves and cabooses, and manufactured all the galleys for the navy yard. He dates back as far as 1780, and perhaps before. He built the first shot tower on the East River, by Kips Bay. He left a large property. His brother, John Youle and Paul A. Sabbaton carried on the stove business at 264 and 266 Water street, and they sold out their business to Isaac Brewster, who subsequently purchased the business from the estate of Geo. Youle, and conducted it until 1834.

One Mr. Hoyt made stoves next door to the corner of Peck Slip, in Water street, and employed Gould Thorp as a journeyman, who subsequently became the owner and carried on the business and made a fortune, as fortunes were counted in those days. He retired from the business, but returned to it and was taken ill and died.

James Wilson was a watchmaker or jeweler, and came from Poughkeepsie about 1812. He made a stove which took with the trade; was a very active, busy man, and made money. He sent a step-son, Harry Wardell, to Boston with capital and stoves; but the young man soon got under a cloud, which hung over Wilson during his lifetime. Yet old "Jimmy" worked away as long as he lived, and died respected by many friends.

Charles Pooty was a cooper by trade, and believing there was a fortune in the stove and caboose business, dropped his hoops and went into the trade. He occupied a store at 260 and 262 Water street, and made money. Believing that he was well fixed, he went to Pennsylvania and bought a furnace property. Here he erected a blast furnace, which resulted in his financial ruin; but had he been able to hold on to the property a few years longer he would have been a millionaire, as it is now in the hands of some railroad company who obtain millions of tons of coal from it; but his fore-sight was not as good as his hindsight, and he lost and did not know it. This is the trouble with most of us.

Doctor Nott, the most learned man who ever got the stove fever, made what was known as the "Nott" stove, and sent his sons to New York under the management of Mr. Stratton, a son-in-law of James Wilson, and bought the store 242 Water street, just built by Charles L. Clupman, also a stove man, and established the Nott Stove Company. They made a great deal of money and built the Novelty Works and the grain boat Novelty, and before they were aware of their condition they were swamped, and the stove business at 242 Water street went into the hands of Stratton & Seymour, and subsequently to Charles Shepard, who was the lively "herald" of Water street. He was elected Alderman in Brooklyn, and died honored by his fellow men.

Soon after H. Nott & Co. had made popular the Nott stove, Prof. Olmstead, of Yale College, introduced what was known as the "Twin" stove, made of Russia sheet iron. Messrs. Sherman & Co. established the business at 210 Water street and made a fortune. They sold out to a clerk by the name of Trowbridge, who added to his worldly gains and retired, selling out his stock to J. D. Andrews, who is a fortune hunter in the mineral country. A. W. Atwater brought out a sheet-iron heating stove and sold out to John Liddle, who continued the business next door to Beekman, in Water street.

A. Packard invented the two-oven caboose in 1840. It is now made and sold in all parts of the world. After it had been in use and become very popular, a patent was found to have been granted to Andrew Austin, living in New Haven, for a cook stove. It was a failure, and the patent was bought by Packard and established in law. Jordan L. Mott obtained a license from Packard to make his tubular two-oven range, from which he helped to make the fortune which the honorable Alderman now so well employs.

OLD WATER STREET BOY.

Cleveland Co-operative Stove Co. send us a circular announcing their removal from their old location, 33 to 37 River street, to new and more commodious warehouses, 26 to 36 Superior street, on the viaduct. On the other side of the circular we find the following:

CLEVELAND, O., Feb. 1, 1880.

To the Trade: One year ago we adopted our present manner of business, viz.: one price, with no variation; no traveling salesmen, and with terms of credit in no case exceeding 30 days. Before adopting this plan we made a careful review of our business for the preceding ten years, and were surprised to ascertain that the items of losses through worthless or compromised accounts, salaries and expenses of traveling salesmen, attorneys' fees and forgetfulness to pay over accounts collected, interest on overdue accounts, expensive system of bookkeeping rendered necessary by long credits, had absorbed nearly 15 per cent. of our gross sales. With these facts in view, this question very naturally presented itself: Would it not be better for all concerned if dealers would purchase as their business demanded, pay promptly inside 30 days, make their selections from their knowledge of our goods, and from such catalogues, printed lists, &c., as we furnished and order direct by mail, without the expensive solicitation of traveling salesmen, and thus effect a saving of this large percentage of apparently unnecessary expenditure? We were fully aware of the many obstacles we should encounter if we attempted so radical a change; we appreciate the force of habit with the trade of making their purchases on long time, and the great reliance they place on the judgment of some favorite traveling salesman to assist them in making their selections; also the fact that nearly all dealers were laboring under the belief that they were getting special figures, otherwise were purchasing much below the regular prices of the firm with whom they were dealing, and much less than their neighbors, therefore would very naturally feel that they were foregoing some of their advantages when selecting from a list that was invariably as regards terms and prices, and perhaps would not fully realize the advantages in prices, &c., which we might offer. Notwithstanding these and many other seeming difficulties, we determined to make the attempt, as it appeared to us certain that many of our customers and others in the trade must desire to be relieved from the payment in the way of high prices of the numerous items of unnecessary expense, and who would appreciate the advantages we could offer. We believed there were many dealers who knew their own wants without being informed of the same by traveling men, and who would prefer to place their orders direct, and for prompt pay, when so large a saving in prices could be secured by so doing.

We also offered, and still offer, to send samples when desired by the trade, of any stove or stoves which they might desire to inspect; if such samples should not meet their entire approval, we would assume them, together with all attending expenses, thus giving dealers an opportunity of inspecting our goods, and approving the same before placing themselves under any obligation. We have during the past year made a vast number of shipments under this arrangement, and with the very best of results, as with very few exceptions samples have met with approval and led to further transactions; but even if samples should not be approved, and we were under the necessity of returning them, the tax would not be severe, as samples could be freighted to California and return at less cost than the salary and expense of a traveling salesman for a single day. After one year's trial of this plan of business we can truly say that the results have been entirely satisfactory to us, and we have the best of reasons for believing satisfactory to our customers, as we have during the past year saved to our customers more than \$50,000, which would otherwise have been uselessly expended. The unprecedented increase in the cost of manufacturing, from causes beyond our control, has caused us, in common with others, to advance our prices from time to time during the past four months; but these advances have not kept pace with the increased cost and the full measure of differences permissible, though our manner of business has been maintained. We respectfully call the attention of the trade to our new price list of cooking stoves, ranges, hollow ware, &c., taking effect Feb. 1. This list will be found, as all other lists issued by us during the past year, from 12½ per cent. to 20 per cent. below the prices of those who still continue the long credit and traveling salesmen system. The advances made in this list do not nearly cover the increased cost of production if all materials were purchased at present ruling prices, therefore we cannot guarantee these prices for any definite time. Trusting it may be for your interest to favor us with your commands.

We are respectfully,
CLEVELAND CO-OPERATIVE STOVE CO.

Labor Troubles in the Pennsylvania Foundries.

There has of late been some excitement in the Pennsylvania stove trade, owing to ru-

(Continued on page 20.)

CORSE & CO.,

STOVE MANUFACTURERS, 399 and 401 RIVER ST., TROY, N. Y.,

Successors to EDDY, CORSE & CO.

RANGES & COOK STOVES

For the Spring Trade.

Send for Price List and Circulars.

New York Agent for Stoves and Repairs, JOHN DERUNDEOU, 258 Water street.

NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings.

Cylinder Brick, &c., &c.

NEW YORK
Nickel Plating Co.,

Licensed by United Nickel Co.,

Manufacturers of

STOVE DOOR KNOBS
and **TURNKEYS.**

Special attention given to
Polishing & Plating all kinds
of Stove Work.

18 Park Place, New York City.

ASH'S
IRON ADJUSTABLE



This Truck can be adjusted to any size Range, Cooking or Heating Stove made, and can be lubricated without removing the stove. Being all iron, it is very durable and neat. As its name implies, it is the most perfect Stove Truck ever offered to the trade. Weight of truck, 10 lbs. Price, \$2.50, net. Manufactured by JAMES ASH,
No. 108 W. Van Buren st., Chicago, Ill.

ISRAEL H. JOHNSON, JR., & CO.

Tool and Machine Works,



YATES' SUPERIOR LIQUID STOVE POLISH.

Patented Jan. 19, 1875.
GUARANTEED THE BEST. IT HAS NO EQUAL.
NO LABOR—NO DUST.

Six years in the market. The demand constantly on the increase. With this polish one man can polish from three to five Stoves (average sizes) in one hour.

One application will protect a stove from rust in the dampest places.

Warranted to be Precisely as Represented.

This Polish must not be confounded with the stove varnishes and stove paints that have been forced on the market during the past few years.

Send for Circular. Manufactured exclusively by

YATES & CO., Rockford, Ill.
For sale by SIDNEY SHEPARD & CO., 86 Lake St., Chicago, Ill.; SOLAR STOVE WORKS (L. D. Wynn, Agt.), Kansas City, Mo.; JOHN DERUNDEOU, 258 Water street, New York City; WESTERN STOVE MFG. CO., 406 N. Main St., St. Louis, Mo.; SIDNEY SHEPARD & CO., 68 Main St., Buffalo, N. Y.

Pat. Mineral Wool.

A. D. ELBERS, 26½ B'way, N. Y.

Address P. O. Box 4461.

FIRE

A New Lining for Fire Chambers in

CHEAP.

DURABLE.



STONE

Soft Coal Stoves. A Late Discovery.

TRY IT.

It has proved to be the MOST ECONOMICAL AND ENDURING LINING EVER USED IN SOFT COAL STOVES. It will add to the value of stoves without increased cost.

NEWTON & CO., Sole Manufacturers, Albany, N. Y.

See Testimonials, besides which we have numerous others of the same tenor.

RANSOM STOVE WORKS,
ALBANY, N. Y., Oct. 9, 1879.

Messrs. NEWTON & CO., Albany, N. Y.—Gents: We have been testing your new brick for several months in a stove (the "Denmark," late "Derby") burning soft coal, and have submitted the brick to the severest test, by the most intense heat when cast-iron would melt, and after repeated examinations we cannot discover the least indication of adhesion of clinker. If you can furnish a brick such as we are testing, it will fill a great want, viz.: durability and cheapness, as compared with iron linings.

Yours respectfully, S. H. RANSOM.

DETROIT, MICH., Jan. 2, 1880.

Messrs. NEWTON & CO., Albany, N. Y.—Gents: In reply to yours of 30th, would say that we have used your Fire Stone for some time, and consider them in

all respects superior to any thing else we have ever seen or used. Yours truly,

MICHIGAN STOVE CO.

M. B. MILLS, Purchasing Agent.

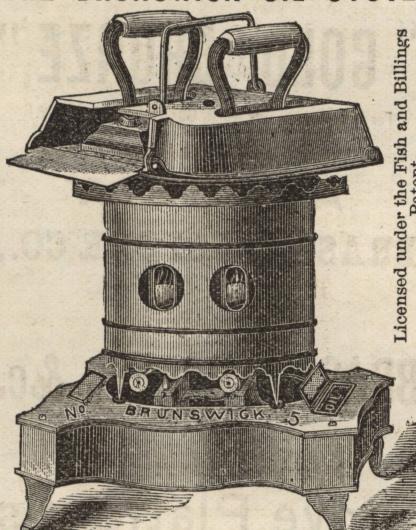
[Extract from the BOSTON COM. BULLETIN, January 10, 1880.]

Newton & Co. of Albany, well known and prominent for many years in the manufacture of fire brick, have after long and persevering experiments succeeded in producing a *clinkerless soft-coal fire stone lining*, which has been put into extensive use the last few months, and is winning golden opinions from the soft-coal burning sections of the country. It is unlike any stove lining ever before made, and the secret of its manufacture is solely theirs. Hitherto the difficulties of producing a stove, either for the parlor or the kitchen, to satisfactorily burn soft-coal, has baffled the skill that has been so abundantly exercised by stove manufacturers. The triumph of Newton & Co., in

producing this *fire stone lining* has enabled manufacturers, who were alert to seize upon it, to produce a better stove for burning soft coal for this season's trade than has ever before been placed on the market, and the West is taking them with avidity. From annually making a wide circuit in the West, the BULLETIN correspondent has become familiar with the annoyances experienced in the soft coal burning sections, and may be pardoned for expressing with some enthusiasm a high appreciation of what these parties have undoubtedly accomplished.

The public expect something new every year in the stove line, but it is doubtful if ever improvements have appeared that have so soon brought such a shower or tidal wave of commendations and congratulations as flow in from the West. And with the new stone lining not an iota of clinker adhered to a stove we saw that had been in use since cold weather came on, fed with the most stubborn of tarry soft coal.

THE BEST STOVE SELLS THE BEST.
THE BRUNSWICK OIL STOVE.



Licensed under the Fish and Billings Patent.

THE
HENDERSON FURNACES

ARE THE

BEST, CHEAPEST,

AND THE

Most Powerful Heaters on the
Market.

Send for Catalogue and Price List, 1880.

Address

J. C. HENDERSON,

193 River Street, - - - TROY, N. Y.

No Brush

No Water

Needed.

JACOBY'S "BRILLIANT"
SELF SHINING STOVE POLISH.

Factory, NEWARK, N. J.

Ask your dealer for it and take no other. It is the best in market.

BEWARE OF WORTHLESS IMITATIONS.

Address all letters to

J. C. JACOBY,

57½ VESEY STREET, NEW YORK.

Was awarded the Diploma of Merit at the American Institute Fair, 1878, and Agricultural and Art Association Fair at Toronto, Canada, 1878.

READ'S

Regulating Check Damper

Patented June 16, 1874; reissued July 15, 1879, and Double-quick Damper, patented Dec. 16, 1879.

Foundries that adopt these improvements will increase their sales and at the same time benefit their customers. The price to use the three patents is 10 cents per range. Licenses can be secured of **JOSIAH M. READ**, Inventor and Patentee, 63 Blackstone St., Boston, Mass.

Wholesale Prices in New York

METALS.

Bar Iron, from Store.

Common Iron:	
1/4 to 2 in. round and square.....	\$ 3.50
1 to 6 in. x 3/8 to 1 in.....	
Refined Iron:	
1/4 to 2 in. round and square.....	\$ 3.80
1 to 6 in. x 3/8 to 1 in.....	
1 to 6 in. x 3/4 and 5/8.....	\$ 4.00
Rods—1/4 and 11/16 round and square.....	\$ 4.50
Bands—1 to 6 x 3/16 to No. 12.....	\$ 4.50
Norway Nails Rods.....	

Sheet Iron.

Common	R. G.
American	American
Nos. 10 to 20.....	\$ 5 @ \$ 14c
21 to 24.....	\$ 5 1/2 @ \$ 14c
25 to 26.....	6 c
27.....	7 @
28.....	6 1/2 c

Galvanized, 10 to 20, B. B., P. D. 11/2c ad quality, P. D. 10c.	
" 21 to 23.....	12 1/2c
" 25 to 26.....	13 1/2c
" 27.....	14 1/2c
" 28.....	15 1/2c

Patent Planished.....	P. D. A. 13 B. 12 C
Am. Cold Roled.....	P. D. B. 12 @ 14c

Iron Wire.	
Brass and Copper.....	List of December 1879, dis 10% Bright and Annealed.....
" " "	Nos. 0 to 18, dis 15@7 1/2c
" " "	Nos. 19 to 26, dis 35@27 1/2c
Coppered.....	Nos. 0 to 18, dis 22@27 1/2c

Galvanized, Nos. 0 to 6.....	P. D. 10c, dis 15@17 1/2c
" 7 to 13.....	market list, dis 15@17 1/2c
Tinned, Nos. 0 to 13.....	dis 25@27 1/2c
Tinned Broom Wire, Nos. 18 to 25.....	dis 37@42 1/2c
Annealed Fence, Nos. 8 and 9.....	dis 25@27 1/2c

" Grape, Nos. 10 to 14.....	dis 25@27 1/2c
Galvanized Telegraph, Nos. 7 to 9.....	dis 25@27 1/2c
" Nos. 10 and 11.....	dis 25@27 1/2c

" " "	N. P. U. P. D. 7 @ 8c
Fence Staples.....	A. 20c; B. 16c; C. 12c; D.

ANTIMONY.....	
" " "	Pipe and Sheet, 2 1/2c P. M.

Japanned Barb Fence.....	P. D. 14c
Galvanized.....	P. D. 15c

Judd's Picture Wire.....	dis 80x20&10%
Clothes Line Wire, Galvanized.....	dis 500 net

COPPER—DUTY: Pig, Bar and Ingots, sc; Old Copper, 4c P. M.: Manufactured (including all articles of which Copper is a component of chief value), 45 ad valorem.	
SHEATHING, BRAZIERS' COPPER, BOLTS, &c.	

Braziers' Copper, ordinary sizes, 10 oz., P. S. Q. ft. and over.....	P. D. 34c
Braziers' Copper, ordinary sizes, under 10 oz. and over 12 oz., P. S. Q. ft.....	36c

Braziers' Copper 10 oz. and 12 oz., P. S. Q. ft.....	38c
Lighter than 10 oz., P. S. Q. ft.....	40c

Circles less than 84 inch in diameter.....	37c
" 84 inch diameter and over.....	40c

Segment and Pattern Sheets.....	37c
Locomotive Fire-Box Sheets.....	34c

Sheathing Copper, over 12 oz. P. S. Q. ft.....	32c
Bolt Copper.....	34c

Copper Bottoms.....	37c
" No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the sq. ft.	

TINNING.....	
14x48, by the case.....	P. sheet 6c

14x48, less than case.....	8c
" Tinning both sides, double the above amount.	

O'NEILL'S PATENT PLANISHED COPPER, net.	
14x48, by the case.....	P. sheet 6c

14x48, less than case.....	8c
" Tinning both sides, double the above amount.	

BROWN & SHARP'S GAUGE THE STANDARD FOR METAL; OLD ENGLISH GAUGE THE STANDARD FOR WIRE.	
BRASS MANUFACTURERS' PRICE LIST.—dis 10% January 15, 1880.	

Cash prices for Roll and Sheet Brass. For less quantity than 10 lb., add 30 P. M.	
HIGH BRASS.	

All Nos. not thinner than No. 28, wider than 2 in., not wider than 14 in.....	32c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive.....	37c

All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive.....	40c
1/2c P. M. advance on each No. above Nos. 28 to 38, inclusive.	

All brass thinner than No. 38 is Platers' Brass, at .05c	
Sheets 24x48 in., and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in.....	

PRINTERS' RULES.....	47c
Sheets wider than 30 in. and under 40 in.....	49c

CIRCULAR SHEETS, in diam. from 4 in. to 14, inclusive.....	42c
" 14 in. to 20, " 20, " 20, " 47c	

" 20, " 30, " 30, " 51c	
" 30, " 40, " 40, " 57c	

" 40 in. " 60, " 60, " 61c	

<tbl_r cells="2" ix="1" maxcspan="1

TIN PLATES

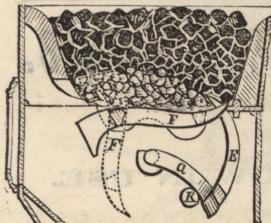
We make it our special aim to import

MAKERS' BRANDS ONLY.

We invite comparison of our prices with those of other houses quoting WELL KNOWN BRANDS, and feel assured that we can from our large assortment of selected brands, bought at low prices, fill all orders promptly and satisfactorily.

All goods guaranteed as represented.

MERCHANT & CO.,
525 ARCH STREET,
PHILADELPHIA, PENN.



GOODFELLOW'S CELEBRATED INTERCHANGEABLE CLIPPER GRATE.

Patented Nov. 4, 1878. Improved, 1879. Improved and Patented, 1880. Adopted by the following Stove manufacturers in preference to other Grates:

Perry & Co.
Burdett, Smith & Co.
W. J. Keep.
Thomas, Roberts, Stevenson & Co.,
Stamford Foundry Co.,
Taunton Stove Co.,
Union Stove Works,
Portland Stove Foundry Co.,
Russell Wheeler, Son & Co.,
Sill Stove Works,
Collins & Burgle,

Highland Foundry Co.,
G. H. Phillips & Co.,
A. P. Corse & Co.,
Bussey, McLeod & Co.,
J. Van Wormer & Co.,
Detroit Stove Works,
Richardson, Boynton & Co.,
Cox, Whitteman & Cox,
W. C. Davis & Co.,
Myers, Osborn & Co.,
and others.

Has stood the test and proved a decided success, thereby receives the highest indorsement of its patrons, who believe it will take precedence of other grates now offered to the trade. Designs of the Clipper Grate adapted to Parlor Stoves are now ready, and can be had on application. For terms address,

GOODFELLOW & MILLER, 359 Second Street, Troy, N. Y.

THE TREMONT RANGE. Heavy Castings, Extra Large Flues,

With one exception the only range made in the West with

RIGHT-HAND FEED.

Every Range guaranteed to give perfect satisfaction in every respect. We also manufacture a full line of Cook, Heating and Parlor Stoves, Grate Fronts and Fenders, Hollow Ware, &c.

H. ANSHUTZ & CO.,

214 Liberty Street, Pittsburgh.



The Baltimore Climax Refrigerator AND WATER COOLER COMBINED.

Patented Dec. 2, 1873—June 1, 1875.

No Drip Pan to Soil the Carpet. Self purifying. Cold, Dry and Pure Atmosphere. Inner case made entirely of Galvanized Iron.

MANUFACTURED AND FOR SALE BY

R. ARMIGER & SON,
12 Second St., Baltimore, Md.

Send for Illustrated Catalogue and Price List.

ESTABLISHED 1833.

W. F. Potts, Son & Co.,
Iron OF EVERY DESCRIPTION, & IMPORTERS OF **Tin Plate.**
Warehouse: Office, 1225 Market St., PHILADELPHIA

RANSOM STOVE WORKS,
ALBANY, N. Y. Manufacturers of CHICAGO, ILL.

Celebrated Hecla Base Burner, Ransom Ranges, Central Draft Wood Stoves.

Send for Catalogue and Price List.

HOOPES & MERRY,

Manufacturers of

"LION" Brand or B B.—"PHOENIX" Brand or Best Charcoal

GALVANIZED SHEET IRON,
539, 541, 543, 545 and 547 West Fifteenth St., New York.

Corrugated Sheet Iron, Black or Galvanized. All kinds of Ironwork, Tinned or Galvanized.

THE IRON AGE.

A Review of the Hardware, Iron and Metal Trades.

Established in 1855 under the name of *The Hardware Man's Newspaper*, changed in 1859 to *The Iron Age*, it is the oldest publication of its class in the world. The next in age is *The Ironmonger* of London, established in 1859.

The circulation of *The Iron Age* is more than double that of any other journal of its class in the world.

In the field which *The Iron Age* occupied twenty-five years ago, it has been steadily growing in favor from year to year, and is to-day practically without competition. The same energy, liberality and skill that have placed it in the front rank of trade journalism will be employed more freely than ever to maintain and advance the high position it has gained.

Rates of Subscription (per annum), including postage:

UNITED STATES, BRITISH AMERICA, AND SANDWICH ISLANDS—Weekly, \$4.50; Semi-Monthly, \$2.30; Monthly, \$1.15.
ALL OTHER COUNTRIES—Weekly Edition, \$5; Semi-Monthly Edition, \$2.50; Monthly Edition, \$1.25.

Advertising, per vertical inch of space in single column, one insertion, \$2.50; one month, \$7.50; three months, \$15; six months, \$25; one year, \$40.

THE METAL WORKER.

A Weekly Journal of the Stove, Tin, Plumbing, and House Furnishing Trades, with which have been consolidated *The Stove and Tin Trade Journal* and *The Sheet Metal Builder*.

The Metal Worker is the only publication in the world devoted to the STOVE, TIN, PLUMBING, CORNICE MAKING, SHEET METAL WORKING trades, and allied industries.

Its circulation is larger than the combined circulation of all the journals in the country devoted to any branch of the metal industries, except *The Iron Age*. This success has been gained by making it valuable to its readers, and it enjoys a popularity which can only be accounted for on the ground that it fully meets their wants.

Rates of Subscription (per annum), including postage:

UNITED STATES, BRITISH AMERICA, AND SANDWICH ISLANDS, \$1.20.
ALL OTHER COUNTRIES, \$2.

Carpentry and Building.

An Illustrated Monthly publication, devoted to all branches of the Wood-Working and Building Trades. It is eminently practical, treating only of those subjects which interest the trades addressed, and giving information which every one connected with the building industries can make useful in his daily work.

It is liberally and handsomely illustrated with wood cuts, plans, details, &c., &c., and no expense is spared to make it of real value to intelligent mechanics.

Among the subjects discussed may be mentioned: Carpentry and Joinery, Framing and Construction, Architecture, Masonry, Drafting, Cabinet Work, Roofs and Cornices, Heating and Ventilation, Plumbing and Gas Fitting, Painting, Iron Work and Plastering.

In paper, printing and engraving, *Carpentry and Building* is first-class, and in all respects a handsome publication, and at a price so low as to put it within the reach of all.

Rates of Subscription (per annum), including postage:

UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS, \$1.
ALL OTHER COUNTRIES, \$1.25.

DAVID WILLIAMS, Publisher,

83 Reade Street, New York.

Philadelphia Office, 220 South Fourth Street. Thos. Hobson.

Pittsburgh Office, 77 Fourth Avenue. Jas. D. Weeks.

Cincinnati Office, Builders' Exchange. T. T. Moore.

Southern Office, cor. 8th and Market Sts., Chattanooga, Tenn. S. B. Lowe.

British Agency, 44a Cannon Street, London, England. Office of "The Ironmonger."

REMITTANCES should be made by draft, payable to the order of DAVID WILLIAMS, on any banking house in the United States or Europe; or when a draft cannot be obtained, in the postage stamps of any country. NEWSDEALERS or BOOKSELLERS in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the International News Company, New York, U. S. A., and London, England; or the San Francisco News Company, San Francisco, California, U. S. A.

(Continued from page 16.)

mors to the effect that a general strike of the molders was imminent, and many manufacturers from that State were deterred from attending the convention last week by the unsettled state of affairs at home. The position at present may be described as follows: An advance of 10 per cent. was paid last fall, and in reply to a demand for a further advance of 15 per cent., to go into effect at once, the employers offer 5 per cent. now and a further increase in July, providing business warrants it. Manufacturers claim that this is all that they can afford and all they will give, strike or no strike. They say that the trouble originated in Reading, among the molders in the hardware branches. It is stated that the hardware manufacturers were not paying nearly so well as the stove manufacturers up to last fall, and as they are now, and have been, doing a heavy and profitable business, they could afford to make advances such as they have given within the past three months, while the stove manufacturers are not nearly in so favorable a position. They claim, moreover, that, as a matter of fact, molders in the stove trades are still making better wages than in other departments, while so far as the employers are concerned, the position is entirely different. Hardware goods have advanced far more than stoves in proportion to the advance in iron. There is also an immediate sale for hardware, so that manufacturers know what they are getting for their goods. Stoves, on the contrary, cannot be sold to any extent for months to come, and it is not by any means certain that they can be sold at all at a profit, if the cost of labor and material are increased as now demanded. The advance in stoves is now only 33½ per cent. from the lowest point, while iron is 150 per cent., and labor 15 per cent. higher. Manufacturers claim, therefore, that it is impossible to advance labor again, until it is seen what is likely to be obtained for their products. So far they say business is at a standstill, and sales cannot be made at prices to leave any margin for their outlay and risks. Then, again, competition with convict labor comes in very strongly. Whatever advances may be paid outside of the penitentiaries, the price of convict labor remains the same. This point is dwelt upon very strongly, and it is claimed that every 5 per cent. advance is just so much gain to the employers of convict labor, and competition from this source seems the more difficult to meet. At Stuart Peterson & Co.'s the men are at work on the understanding that they are to have whatever advance is paid by others. At the Liberty Stove Works (Chas. Noble & Co.) it is understood that 5 per cent. advance is accepted. At the Liebrandt & McDowell Stove Co.'s Works about half the men are at work; the other half stand out for the full advance. The Excelsior Works, Isaacs A. Sheppard & Co., and the Penn Stove Works, Cox, Whiteman & Cox, have been closed for a couple of weeks for repairs, &c., and it is not known what will be done, although likely that 5 per cent. will be accepted. Orr, Painter & Co., Reading, Shantz & Keeley, Spring City, and Thomas, Roberts, Stevenson & Co., Quakertown, are working with apprentices, and are determined not to yield to what they believe are unjust demands. They offer 5 per cent. at once, and a further advance during summer if circumstances warrant it. We have just learned from the Philadelphia office of Orr, Painter & Co., that the molders at their establishment at Reading have gone to work at 5 per cent. advance.

It always pays to be polite. In crossing the street, let the man walking with you go first. He'll tramp down the snow and you can follow in the tracks.

BRIGHTWOOD**COMPRESSION WORK."***The Best and Cheapest.*

Wherever tried admitted to be the best in the market.

MANUFACTURED ONLY BY THE

E. STEBBINS MFG. CO.,

Brass Founders and Finishers,

Brightwood, (Springfield), Mass.

Send for Circular and Price List.

I. SCHOENBERG, Pres. S. BLONDHEIM, Sec'y.

The Schoenberg Metal Mfg. Co.,

Manufacturers of and Dealers in

SOLDER, TYPE,

Stereotype, Electrotype, and Babbitt Metals, Importers of Block Tin, Antimony, &c. Refiners of Lead, Spelter, &c. Highest price paid for Old Metals and all kinds of Dross. 524 and 530 East 20th Street, between Avenues A & B, New York.

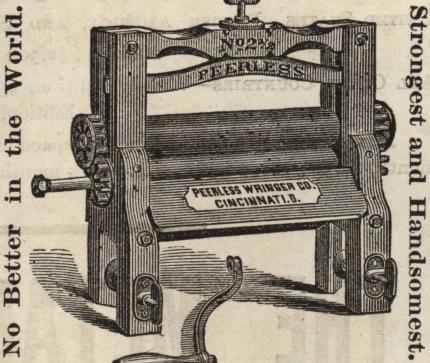
NORTH AMERICAN CHIMNEY CAP.

All Cast and Wrought Iron.

Sure cure for poor drafts and smoky chimneys. Price, \$6.00, net.

GILES STOVE CO., Troy, N. Y.**The Leading Wringer of America.****SIMPSON & GAULT,**
(Peerless Wringer Co.)European Offices,
New York Office, Place Vendome, Paris.
7 Chambers St. 7 Poultry, London.Office and Factory,
CINCINNATI, OHIO.**PEERLESS**
Clothes Wringers,

Sold by the Jobbing Trade everywhere.



No Better in the World.

Strongest and Handsomest.

Most Saleable Wringer in the Market.

TRY A SAMPLE ORDER.

Special Notices.**Skylights, &c.**

All persons are hereby cautioned against the purchasing, using, vending or selling, or having in their possession for sale or use, any Metallic Skylights, whether wholly or in part embraced within certain Letters Patent of which I am the sole and exclusive owner, without my permission and license, as such will be prosecuted to the fullest extent of the law.

Copies of said Letters Patent may be inspected at my office, or that of my counsel, and all duly authorized Skylights will bear my label.

All so-called patents of other persons are contingent to, and infringements upon, mine, and calculated to deceive.

GEORGE HAYES,
71 Eighth Avenue, New York.
By his Attorney and Counsel,
JAS. H. WHITELEGGE, 136 Chambers St., N. Y.

January 1, 1880.

THE STYLOGRAPHIC LETTER COPYING BOOK.

Letters written and copied at one writing. No Ink. No Press. No water used. ALL BUSINESS MEN USE THEM. ALL STATIONERS SELL THEM.

Send for Circular to the Manufacturers

J. S. McDONALD & CO.,
Blank Book Makers, 158 and 160 Clark St.,
CHICAGO, ILL.

For Sale Cheap.

I will sell the stock, tools and fixtures of the stove store lately owned by Mr. N. Downer, in this city, cheap. To a person desirous of engaging in the business this is a rare chance. Oldest established house in the city. Location excellent. APPRAISED value, \$3500. Terms, cash or approved paper

Apply in person or by letter to
EDWIN F. HOYT,
Assignee of NICHOLAS DOWNE,
36 & 38 Warren street, Syracuse, N. Y.

Important to Stove Dealers.

My Patent Air-Heating Attachment for Cooking and other Stoves, Ranges, &c., by which an adjoining or upper room can be thoroughly warmed by one fire, is now for sale in state, county or shop rights. My terms are so reasonable as to leave no room for an infringement of my patent, and at the same time so liberal as to insure large profits to the trade. Circulars sent on application to J. M. PATTERSON, Patentee, Woodbury, N. J.

WANTED,

To travel for a large stove manufacturing concern, a competent man thoroughly acquainted with the trade tributary to New York city.

Address, with references, &c., X Y Z,

Office of *The Metal Worker*, 83 Reade st., N. Y.

For Sale Cheap.

A stock of Tinware and Tools; also, lot 23 x 132 feet, on which is situated a two-story frame building 20 x 30 feet, with workshop 18 x 20 feet. A good opportunity for a tinner to buy and put in a stock of stoves. Reason for selling, wishes to go into some other business. For further particulars address

B. GOODMAN,
Auburn, Ind.**ARMSTRONG'S Adjustable Stock and Dies**
For Pipe and Bolts,

Have the following advantages:

1st.—The Armstrong Improved Dies can be adjusted to the variations in the size of fittings.

2d.—The Armstrong Dies, by reason of their peculiar cutting edge, can be worked with much less labor, and accomplish the desired results in less time, than with the solid Die.

3d.—The Armstrong Dies have a double taper that is, the taper at the entrance for the first few threads is greater in degree than the standard taper, *which forms a lead to the Dies*, causing them to start on the pipe without filing, even when there is a swell or burr, and requiring no pressure whatever to start the Dies on the pipe.

4th.—The Armstrong Dies being made in two parts instead of one (as in the solid Die), can be more perfectly constructed; the cutting edges reached more directly; the work done with greater precision and uniformity, by which they accomplish a much better result.

5th.—The Armstrong Dies can be sharpened without drawing the temper, and can be kept in good condition easier and with less expense than any other Dies ever offered to the public. A mechanic can sharpen these Dies, and is not obliged to send them to the manufacturer, as is the case with solid Dies when they become dull.

6th.—The Armstrong Dies are interchangeable in the stock, and although adjustable, do not need adjusting to cut the standard size for which the dies are made. The adjusting is only done when the irregularity or variations in the fittings make it necessary. There are corresponding marks (\$) on the Stock and on the Dies (\$), and when these marks are brought into line the Dies will cut the standard size.

For sale by leading dealers in Hardware and Steam and Gas Fitters' Tools. For further particulars address,

F. ARMSTRONG, Bridgeport, Conn.**The Original and Genuine.**

ALL OTHERS ARE IMITATIONS.



OVER 100,000 NOW IN USE.

JEWETT'S PATENT WATER FILTER

With Porcelain-Lined Cooler.

ACKNOWLEDGED THE ONLY COMPLETE AND SUCCESSFUL FILTER AND COOLER IN THE WORLD.

ISAAC S. WILLIAMS & CO., 728 Market Street, Philadelphia, Pa.—We have sold your "Patent Water Filter" for the last six years. Our sales in that time having reached upwards of five thousand and in no instance have we heard of any failure in performing all you claim for them.

SEND FOR CIRCULAR.

JOHN C. JEWETT & SONS,
BUFFALO, N. Y.**CLEVELAND****NICKEL PLATERS & MACHINISTS,**

PATTERN WORK, &c.

Knobs, Turn and Hinge Pins

For the Stove Trade a specialty.

Any desired pattern or style.

W. W. SLY,
203 Canal Street, Cleveland, O.

Give us your designs and send for prices.

Nickel Works.Prices Always as Low as the Lowest.
TIN PLATES, SHEET IRON, COPPER, SOLDER, TINNERS' SUPPLIES,
STOVES and STAMPED WARE.

Mail orders shipped as promptly and sold as low as if buyers called in person. No larger stocks anywhere.

RANDALL & STRANSKY, 84 West Front St., Cincinnati, O.

STANDARD TINWARE CO.,

Successors to JOSEPH SCHEIDER & CO.,

MANUFACTURERS OF

Plain, Stamped and Japanned Tinware,
TINNERS' TRIMMINGS, HOUSEFURNISHING GOODS, &c.

NO. 51 CLIFF STREET, NEW YORK.

Nickel Plated Rods,

FOR

STOVES, STOVE POKERS, &c.,

Made from our Ornamental Wire. Samples and estimates free to the trade.

We also manufacture Air Guns, Air Gun and Pistol Ammunition, Nut Picks, Stair Rods, Foot Lathes, &c., &c.

H. M. QUACKENBUSH, Herkimer, N. Y.

**THE INCOMPARABLE**

Manufactured by TUCKER ALARM TILL MANUF'G CO.

INDIANAPOLIS, IND.

October 1st,

1878.

Adjustable STOVE TRUCK.

Send for Illustrated Catalogue.

J. M. ROBINSON & CO.

MANUFACTURERS OF

PRESSES AND DIES,

AND

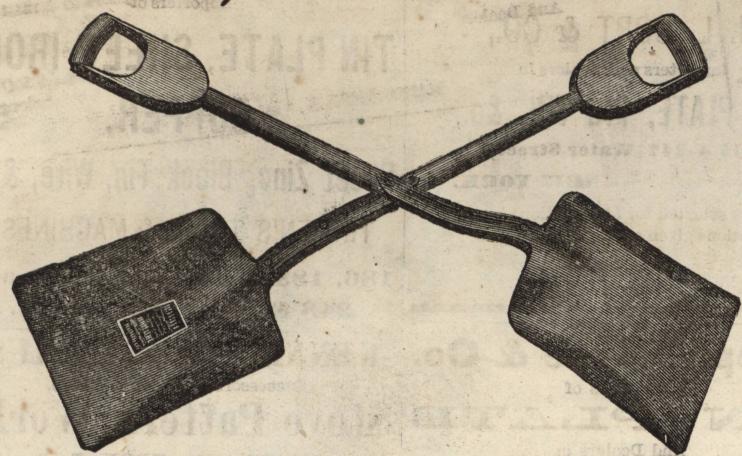
Sheet Metal Bending

AND FORMING MACHINES.

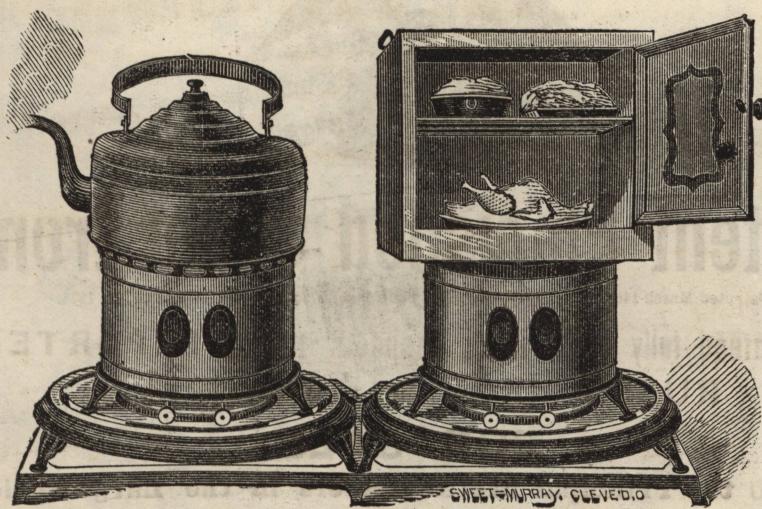
Send for Catalogue.

No. 50 Central Av., Cin., O.

HUSSEY, BINNS & CO.,



PITTSBURGH.
SHOVELS, SPADES & SCOOPS.
STAR OIL STOVE.



The Most Successful Oil Stove Yet Introduced,

and the only one made of Solid Cast Iron with Black Enamelled Cook Drum. Many thousands in use and not a single accident. Its ease in operation, economy, neatness and durability have justly made it the Popular Oil Stove of the day. Write for circulars and prices. A liberal discount to the trade.

Manufactured only by

MYERS, OSBORN & CO.,

Chicago Agency, 42 & 44 Lake St.

CLEVELAND, OHIO.



ORR, PAINTER & CO., MANUFACTURERS OF Stoves, Heaters, Ranges &c.

Specialties as follows:

Light House Cook, Harmony Cook, Excelsior Penn Cook, Morning Light Cook, Olive Branch Cook, Advance Cook, Progress Cook, Emerald Cook, Cadet Cook, Pride of Home Cook.

RANGES.

Sunshine, Alpine, Keystone, Record, Ivy, Beauty, Poesy Stuart, Clarion, May Flower, Extra Sterling, (brick set), and Excelsior Penn (brick set).

PARLOR HEATERS.

New Anchor, Anchor, La Grande and Twilight.

PARLOR STOVES.

Irving, La Grande, Early Dawn, Anchor, Iris, La Belle, Fairy, Twilight and Coral.

EGG CYLINDER STOVES: Magnet and Etna.

WOOD STOVES: Sylvan and Woodward.

PORTABLE FURNACE: Equator.

ALSO

Hollow Ware, Registers, Plumbers' Supplies, &c.

OFFICE AND FOUNDRY,

Canal Street, below Chestnut, READING, PA.

PHILADELPHIA SALES AGENCY:

WM. THOMSON, 64 North 2d St., Philadelphia.

SAM S. UTTER,

113 Beekman Street, New York.

THE SAM RANGE

Large sales being made of the new first-class cheap Range,

WIDE AWAKE.

Now ready, the beautiful Base Burner for 1879.

LIBERTY PARLOR.

The first-class self-feeder for 1879,

STAR KING,

both plain and extra finish,

FLORA.

An immense variety of Cooking and Heating Apparatus for every want.

Agents for the Manufactures of CHAS. NOBLE & CO. Phila.

EVERYTHING AT POPULAR PRICES.

EMPIRE FORGES

IMPROVED without Belts, Bellows, Crank Pins Dead Center or Back Motion. Send for circular.

EMPIRE PORTABLE FORGE CO., COHOES, N. Y.

BLISS & WILLIAMS,

MANUFACTURERS OF ALL KINDS OF

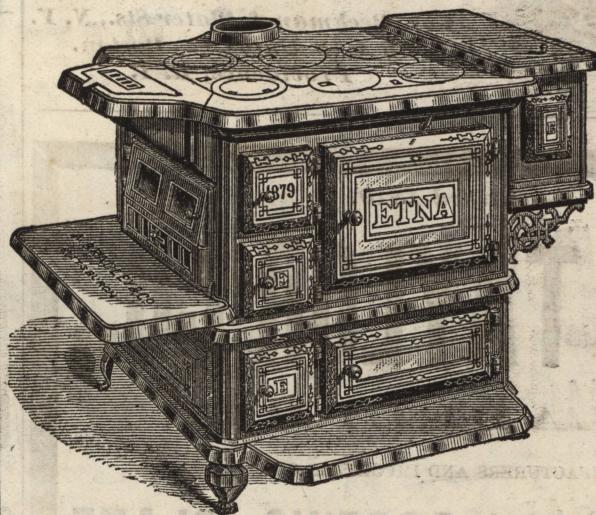
PRESSES, DIES AND SPECIAL MACHINERY

For Working Sheet Metals, &c.

FRUIT AND OTHER CAN TOOLS.

Plymouth, Pearl and John Streets, Brooklyn, N. Y.

ETNA STOVES AND RANGES.



Heavy Lids
and
Connection,
Cut Top,
Automatic Shelf
and the
Celebrated
DUPLEX GRATE.

Hereafter the Etna Ranges will be made both Right and Left. This will meet a long felt want.

A. BRADLEY & CO., Pittsburgh, Pa.

STUART, PETERSON & CO., PHILADELPHIA,

Manufacturers of the following Celebrated

STOVES, HEATERS AND RANGES.

Sunnyside Baltimore Fire Place Heater,
Fire Queen Cellar Heater and Brick Heaters,
Sunnyside Flat Top Ranges,
Rosedale Cooking Stove,
Barley Sheaf Cooking Stove,
Sunbeam and Early Bird Ranges,
Lily of the Valley Heating Stove, &c.

ENTERPRISE Mfg. CO. of PA.

PATENTED HARDWARE MANUFACTURERS & IRON FOUNDERS,

THIRD and DAUPHIN Sts., PHILADELPHIA.

New York Branch House with

DURRIE & McCARTY, 97 Chambers Street.

TO THE DRUGGIST
IN MAKING
Decoctions, Infusions, Syrups, &c.

Invaluable

IN THE HOUSEHOLD, STORE AND RESTAURANT
IN MAKING
Fruit Butters, Wines & Jellies.



Enterprise Combination Fruit Press.
Price, \$3.50.

SPECIALTIES.

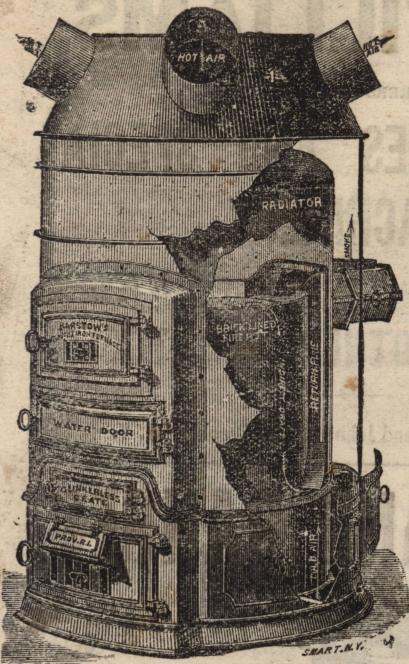
Enterprise Patent Cold Handle Double Pointed

SMOOTHING & POLISHING IRONS
CHAMPION TOBACCO CUTTERS,
PATENT MEASURING FAUCETS,
SELF-WEIGHING CHEESE KNIVES,
&c., &c.

SPECIALTIES.

AMERICAN

COFFEE, SPICE & DRUG MILLS,
SAUSAGE STUFFERS,
FRUIT, LARD and JELLY PRESSES,
CHAMPION DRIED BEEF SHAVERS,
Bung-Hole Borers,
&c., &c.



THE CELEBRATED
BARSTOW
Wrought Iron
Furnace

For Anthracite or Bituminous Coal.
THIRTEEN SIZES, PORTABLE AND
BRICK SET.

Contains important improvements found in no other. Is permanently gas tight. Has no over-heated radiating surfaces. Is economical and powerful, simple and durable. The material and workmanship are the same as in all other goods of our make, which has gained for us our worldwide reputation for producing the finest goods in the trade. Send for descriptive circular and prices.

BARSTOW STOVE CO.,

*Cor. Beekman & Water Sts., N. Y.
56 & 58 Union St., Boston.
Providence, R. I.*

Established 1810.

N. & G. TAYLOR CO.,

PHILADELPHIA,

MANUFACTURERS AND IMPORTERS OF

TIN PLATE and ROOFING PLATE
OF ALL SIZES.

SOLE IMPORTERS AND MANUFACTURERS OF

The Celebrated Double-Dipped Leaded

"OLD STYLE"
CHARCOAL ROOFING PLATE,

AND

"HENDY" CHARCOAL BRIGHT TIN.

Tissue Paper Packed.

A specialty of sizes for COTTON CANS and DAIRY APPARATUS.

"HENDY" SOLDER, our own process, finest made.

WHOLESALE AND RETAIL DEALERS IN

SHEET IRON, METALS, WIRE, SHEET ZINC, SOLDER,
TOOLS AND MACHINES AND GENERAL
SUPPLIES OF THE TRADE.

OFFICES, 301, 303 AND 305 BRANCH ST.,
PHILADELPHIA.

ABENDROTH & ROOT MFG. CO.,

MANUFACTURERS OF

SPIRAL-RIVETED AND GROOVED SEAM PIPE,

Of Black and Galvanized Sheet Iron, Tin, &c.



ALSO,

**Black & Galvanized Sheet Iron, Corrugated Sheets,
Sheet Iron Fittings, &c.**

GALVANIZING IN ALL ITS BRANCHES.

Root's Wrought Iron Sectional Safety Boilers, Machinery, Castings, &c.
Send for Illustrated Catalogues. Agents for Globe Ventilator Co.

WORKS Brooklyn, N. Y. OFFICE & WAREHOUSE, 28 Cliff St., New York.

N. L. CORT & CO.,

Importers and Dealers in

TIN PLATE, PIG TIN, &c.,

245 & 247 Water Street,

NEW YORK.

Orders solicited for Importation.

Quotations given on application.

Joseph Byrne & Co.

Importers of

TIN PLATE

And Dealers in

METALS,

86 Beekman Street, NEW YORK.

BRUCE & COOK,

Importers of

TIN PLATE, SHEET IRON,

COPPER,

Sheet Zinc, Block Tin, Wire, &c.,

TINMEN'S TOOLS & MACHINES,

186, 188 & 190 Water St., and

248 & 250 Pearl St., N. Y.

KENNEDY & VITALIUS,

(Successors to HIRAM J. MANN),

Stove Pattern Works

409 River St., TROY, N. Y.

All kinds of Patterns belonging to the stove
trade made to order. Duplicate Iron Patterns
latest styles, for sale.

W. D. WOOD & CO.'S



Patent Planished Sheet Iron.

Patented March 14th, 1865; April 8th, 1873; Sept. 9th, 1873; Oct. 6th, 1874; Jan. 11, 1875.

Guaranteed fully equal in all respects to the IMPORTED
RUSSIA IRON, and at a much less price.

FOR SALE

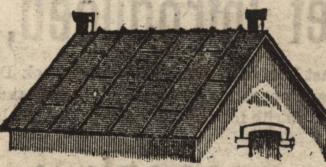
By all the Principal Metal Dealers in the Large Cities
Throughout the United States,

And at their Office, 111 Water St., PITTSBURGH, PA.

GARRY IRON ROOFING CO.,

Manufacturers of all kinds of
IRON ROOFING AND
CRIMPED SIDING.

Fire-Proof Doors
and Shutters.



Iron Ore Paint
and Cement.
79 & 81 Columbus Street
CLEVELAND, OHIO.
Send for circulars and price
lists.

**N. S. VEDDER'S
STOVE PATTERN WORKS.**

ESTABLISHED 1835.

Corner Fulton and Fourth Streets, TROY, N. Y.

Manufacturer of all kinds of STOVE PATTERNS RANGES, HEATERS &c. Always a large variety of the
latest styles of iron patterns for sale. Undressed or dressed mold boarded and flask ready for the sand.

NEW PATTERNS.

LIGHT CHEAP COAL & WOOD COOK,

And New Cannon Stove Pattern.

E. J. CRIDGE, 452 Fulton St., Troy, N. Y.

Smith & Anthony Stove Co.,

(Successors to BOSTON AND MAINE FOUNDRY CO.)

MANUFACTURERS OF

Furnaces, Ranges, Stoves, Hollow Ware, Sinks, &c.



Superior Castings

All goods Fully

a Specialty.

Warranted.

Within a few weeks we shall offer the trade several New and Attractive
Specialties. Prices and descriptive Circulars furnished on application.

SMITH & ANTHONY STOVE CO.,

52 and 54 Union Street, Boston.